THE AMERICAN YEAR BOOK

1915

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THE AMERICAN YEAR BOOK

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1915

EDITED BY

FRANCIS G. WICKWARE, B. A., B. Sc.

WITH COÖPERATION OF A SUPERVISORY BOARD
REPRESENTING NATIONAL LEARNED SOCIETIES

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PREFACE

With the publication of this volume, covering the events in progress in 1915, the AMERICAN YEAR BOOK reaches its sixth issue. The YEAR BOOK for 1915 follows the lines of the issue for 1914, with the organization of the departments changed only in minor details, and the scope of the work remains as defined in the preface to the first issue:

"The AMERICAN YEAR BOOK is intended for the needs of writers and searchers of every kind. Because of its inclusion of scientific subjects, it has been necessary to limit the political and statistical material which is the staple of many annual handbooks; the book does not aim to treat everything that could be useful, but throughout to select from the enormous mass of details those things which, in the judgment of experts in each field, are most significant, most permanent in value, most likely to answer the searchers' questions.

"The AMERICAN YEAR BOOK does not aim to be a rival of other annual publications, either foreign or domestic. Details as to elections, the *personnel* of state and municipal governments, political personalities, societies, and educational, literary, and scientific institutions have deliberately been reduced, in order to make room for material of a kind not found in most of the annuals. The AMERICAN YEAR BOOK appeals first of all to students in all fields, who wish a record of progress, not only in their own, but in other departments of human endeavor. It is intended, also, as a handbook for busy men, editors, contributors, professional men, teachers, scientific workers, engineers, practical and business men, who wish to verify or confirm points that arise in their minds; and to serve as a handy body of reference material settling questions of fact. Throughout the work the object has been to make the volume convenient for the user; hence the YEAR BOOK is arranged on a plan entirely unique in publications of this general character. It is intended to make reference easier by subdividing material into departments, by putting cognate subjects into close association, and by liberal cross-references, making it easy to turn at once to the discussions relating to any subject. A full and carefully analyzed index is also provided in order to open up all remote connections and relations of a topic. This arrangement by groups of affiliated subjects, instead of haphazard or alpha-

betical succession of topics, is more convenient, and at the same time more scientific."

The Supervisory Board of representatives of national learned and scientific societies, officially known as the American Year Book Corporation, has continued actively to assist in the preparation of the YEAR BOOK. The members of this Board, who originally projected the work, remain individually responsible for the scope and content of the reviews of their respective fields; several are themselves contributors; many have coöperated with the Editor in securing contributors; and all have assisted the Editor with criticism and counsel. The Supervisory Board has now forty members, a complete list of whom will be found on a subsequent page, representing forty-four societies. Only one change in *personnel* has occurred during the year, the death of Mr. John W. Alexander, President of the National Academy of Design, and the appointment of Mr. Herbert Adams as representative of the American Federation of Arts.

One hundred and twenty-five contributors have coöperated in the preparation of this issue. All are experts in their special fields, and the complete list printed on a subsequent page contains many names of eminence.

The record of the year 1915 is dominated by the influence of the European War. The pages of this volume reveal the amazing diversity of its reactions in the United States, which touch every aspect of American life, in some directions with profound and permanent results. No domestic event of the year approaches in importance the controversies with the European belligerents in which the defense of neutral rights has involved the United States, and none is more striking than the effects of the war on American foreign commerce and domestic industry. These principal reactions in America are discussed in this volume with fullness and authority, as are the military operations of the war and the course of events in the warring countries. American events and progress in politics, economics, sociology, the sciences, the arts, and the humanities, are comprehensively reviewed, and are placed in their proper perspective by a background of the significant events in foreign countries.

The acknowledgments of the Editor are due, not only to the contributors and members of the Supervisory Board, but also to the many public officials, Federal, state, and municipal, who have courteously responded to requests for statistical data, and to the readers who have offered disinterested criticism of previous issues. The Editor welcomes criticism and suggestions from any source on the selection of material and method of treatment, or on the more formal side of typography, make-up, and conveniences for users.

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THE AMERICAN YEAR BOOK

A RECORD OF EVENTS AND PROGRESS

I. AMERICAN HISTORY

FRANCIS G. WICKWARE

The history of the United States in the year 1915 is primarily the history of the reactions of the European War in America. In ways unforeseen and to an extent undreamed of a year ago, every element of American life has felt the influence of the struggle. The pages of this volume exhibit the amazing diversity of its effects, which in many directions have been of profound and permanent importance. This article deals with the problems encountered by the United States in the defense of its neutral rights against transgression by the European belligerents and the maintenance of its neutrality under neutrality assault by domestic partisans.

BRITISH RESTRAINTS ON COMMERCE

The Declaration of London and the Law of Contraband.—The Declaration of London, signed on behalf of the ten leading maritime powers participating in the International Naval Conference of 1908, was intended to supply an international code on disputed points of prize law and to define precisely the agreement of the Conference on certain important principles of naval warfare relating to the subjects of blockade, contraband, continuous voyages, unneutral service, destruction of neutral prizes, transfer of flag, enemy character, convoy, resistance to visit and search, and indemnity for seizure. The provisions of the Declaration on the subject of contraband embodied specific schedules of absolute and conditional contraband, and also a list of 17 groups of articles which should never be classed as contraband in any circumstances; this absolute free list including cotton, silk, flax, rubber, metallic ores and other raw materials, and certain articles, such as agricultural and mining machinery, clocks, watches, furniture, etc., which could be used only incidentally in war. While the articles dealing with contraband were acceptable to the British Government, they did not satisfy British public opinion, and on Dec. 12, 1911, the House of Lords rejected a Naval Prize. bill incorporating the provisions of the Declaration of London. Great Britain neglected to secure acceptable modifications by negotiation with the other signatories, and as she was not in a position to ratify, the Declaration was formally ratified only by the United States (April 24, 1912). France, however, embodied its provisions in the "Instructions for the Application of International Law in Case of War," issued on Dec. 19, 1912, and Germany likewise incorporated its provisions in the prize ordinance drafted in September, 1912, and issued on Aug. 3, 1914.

Shortly after the outbreak of the European War, the United States suggested to the belligerents the adoption for the sake of uniformity of the Declaration of London as a temporary code of naval warfare during the period of the war. Germany and

Austria-Hungary agreed, upon condition of reciprocity, but Great Britain, France and Russia declined to promulgate the Declaration without certain additions and modifications, later incorporated in the British orders-in-council. As the terms of the Declaration required its acceptance as a whole, the United States withdrew the suggestion, and so informed Germany late in October, on the receipt of a memorandum of protest addressed by Germany to the neutral signatories against violations of the Declaration by Great Britain and France. The American memorandum, after explaining the reasons for the withdrawal of the suggestion for the temporary adoption of the Declaration, reserved to the United States complete freedom of action, in the following terms:

> The United States Government, therefore, will insist that its rights and duties and those of its citizens in the present war be defined by the existing rules of international law and the treaties of the United States with the belligerents independently of the provisions of the Declaration, and this Government will reserve the right to enter a demand or protest in every case in which the rights and duties mentioned above and defined by existing rules of international law are violated or their free exercise hindered by the authorities of the belligerent Governments.

British Modifications of the Declaration of London.—While Great Britain found it incompatible with the interests of the Allies to accept the Declaration of London in its entirety, she adopted it in modified form, with the concurrence of France and Russia, as a statement of the principles governing her conduct of warfare on the sea. By an order-in-council of Aug. 20, 1914, the Declaration was ordered "adopted and put in force by His Majesty's Government as if the same had been ratified by His Majesty," subject to certain additions and modifications. The most important changes widened the ground for presumption of hostile destination and extended the doctrine of continuous transport to conditional contraband. According to the Declaration, conditional contraband was subject to capture only if shown to be destined for the use of the armed forces or the government of the enemy state, and that destination was presumed to exist if the goods were consigned to enemy authorities, or to a contractor to the government, or to a fortified place or other place serving as a base for the armed forces of the enemy. Further, as the result of a diplomatic compromise (*A. Y. B.*, 1910, p. 110), the Declaration applied the rule of continuous transport to absolute contraband, but expressly rejected the doctrine for conditional contraband, except when the enemy country has no seaboard. The modifications introduced in the Declaration of London by an order-in-council of Oct. 29, which purported to reënact the order of Aug. 20 "with amendments in order to minimize, so far as possible, the interference with innocent neutral trade occasioned by the war," were as follows:

> 1. During the present hostilities the provisions of the convention known as the Declaration of London shall, subject to the exclusion of the lists of contraband and non-contraband, and to the modifications hereinafter set out, be adopted and put in force by His Majesty's Government.
>
> The modifications are as follows:
>
> (i) A neutral vessel, with papers indicating a neutral destination, which, notwithstanding the destination shown on the papers, proceeds to an enemy port, shall be liable to capture and condemnation if she is encountered before the end of her next voyage.
>
> (ii) The destination referred to in Article 33 of the said Declaration shall (in addition to the presumptions laid down in Article 34) be presumed to exist if the goods are consigned to or for an agent of the enemy State.
>
> (iii) Notwithstanding the provisions of Article 35 of the said Declaration, conditional contraband shall be liable to capture on board a vessel bound for a neutral port if the goods are consigned "to order," or if the ship's papers do not show who is the consignee of the goods or if they show a consignee of the goods in territory belonging to or occupied by the enemy.
>
> (iv) In the cases covered by the preceding paragraph (iii) it shall lie upon the owners of the goods to prove that their destination was innocent.
>
> 2. Where it is shown to the satisfaction of one of His Majesty's Principal Secretaries of State that the enemy Government is drawing supplies for its armed forces from or through a neutral country, he may direct that in respect of ships bound for a port in that country, Article 35 of the said Declaration shall not apply. Such direction shall be notified in the London *Gazette*, and shall operate until the same is withdrawn. So

long as such direction is in force, a vessel which is carrying conditional contraband to a port in that country shall not be immune from capture.

During the first three months of the war also, successive orders-in-council, of Aug. 20, Sept. 21 and Oct. 29, made extensive additions to the contraband schedules authorized by the Declaration of London. Finally, an order-in-council of Dec. 23, 1914, established new lists of absolute and conditional contraband, which represent, with certain important additions by orders-in-council of March 11, May 27, Aug. 20, and Oct. 14, 1915, the considered policy of the British and French Governments. The schedules of contraband as finally established by the order of Oct. 14 are as follows:

Schedule I. Absolute Contraband[1]

1. Arms of all kinds, including arms for sporting purposes, and their component parts.*
2. Implements and apparatus designed exclusively for the manufacture of munitions of war, or for the manufacture or repair of arms or of war material for use on land or sea.*
3. Lathes and other machines or machine tools capable of being employed in the manufacture of munitions of war.
4. Emery, corundum, natural and artificial (alundum), and carborundum, in all forms.
5. Projectiles, charges, and cartridges of all kinds, and their component parts.*
6. Paraffin wax.
7. Powder and explosives specially prepared for use in war.*
8. Materials used in the manufacture of explosives, including: Nitric acid and nitrates of all kinds; sulphuric acid; fuming sulphuric acid (oleum); acetic acid and acetates; barium chlorate and perchlorate; calcium acetate, nitrate and carbide; potassium salts and caustic potash; ammonium salts and ammonia liquor; caustic soda, sodium chlorate and perchlorate; mercury; benzol, toluol, xylol, solvent naphtha, phenol (carbolic acid), cresol, naphthalene, and their mixtures and derivatives; aniline and its derivatives; glycerine; acetone; acetic ether; ethyl alcohol; methyl alcohol; ether; sulphur; urea; cyanamide; celluloid.
9. Manganese dioxide, hydrochloric acid, bromine, phosphorus, carbon disulphide, arsenic and its compounds, chlorine, phosgene (carbonyl chloride), sulphur dioxide, prussiate of soda, sodium cyanide, iodine and its compounds.
10. Capsicum and peppers.
11. Gun mountings, limber boxes, limbers, military wagons, field forges and their component parts, articles of camp equipment and their component parts.*
12. Barbed wire and the implements for fixing and cutting the same.*
13. Range-finders and their component parts, searchlights and their component parts.*
14. Clothing and equipment of a distinctly military character.*
15. Saddle, draught, and pack animals suitable, or which may become suitable, for use in war.*
16. All kinds of harness of a distinctly military character.*
17. Hides of cattle, buffaloes, and horses; skins of calves, pigs, sheep, goats, and deer; and leather, undressed or dressed, suitable for saddlery, harness, military boots, or military clothing; leather belting, hydraulic leather, and pump leather.
18. Tanning substances of all kinds, including quebracho wood and extracts for use in tanning.
19. Wool, raw, combed, or carded; wool waste; wool tops and noils; woolen or worsted yarns; animal hair of all kinds, and tops, noils, and yarns of animal hair.
20. Raw cotton, linters, cotton waste, cotton yarns, cotton piece goods, and other cotton products capable of being used in the manufacture of explosives.
21. Flax, hemp, ramie, kapok.
22. Warships, including boats and their component parts of such a nature that they can only be used on a vessel of war.*
23. Submarine sound-signaling apparatus.*
24. Armor plates.*
25. Aircraft of all kinds, including aeroplanes, airships, balloons and their component parts, together with accessories and articles suitable for use in connection with aircraft.*
26. Motor vehicles of all kinds and their component parts.*
27. Tires for motor vehicles and for cycles, together with articles or materials especially adapted for use in the manufacture or repair of tires.*
28. Mineral oils, including benzine and motor spirit.*
29. Resinous products, camphor, and turpentine (oil and spirit); wood tar and wood-tar oil.*
30. Rubber (including raw, waste, and reclaimed rubber, solutions and jellies containing rubber, or any other preparations containing rubber, balata, and guttapercha, the following varieties of rubber, viz.: Borneo, Guayule, Jelutong, Palembang, Pontianac, and all other substances containing caoutchouc), and goods made wholly or partly of rubber.*
31. Rattans.

[1] The schedule of absolute contraband in the order-in-council of Dec. 23, 1914, included the classes indicated by *, together with parts of classes 8, 33, and 41. The order of March 11 further extended class 8 and added classes 6, 17, 19, 32, and 39. The order of May 27 added toluol to class 8 and new classes 3 and 42. Cotton (class 20), except in piece goods, was added by the order of Aug. 20, and the remainder of the schedule by the order of Oct. 14, the latter a complete revision and restatement of the earlier lists and additions.

32. Lubricants.
33. The following metals: Tungsten, molybdenum, vanadium, sodium, nickel, selenium, cobalt, hematite pig-iron, manganese, electrolytic iron, and steel containing tungsten or molybdenum.
34. Asbestos.
35. Aluminium, alumina, and salts of aluminium.*
36. Antimony, together with the sulphides and oxides of antimony.*
37. Copper, unwrought and part wrought; copper wire; alloys and compounds of copper.*
38. Lead, pig, sheet, or pipe.*
39. Tin, chloride of tin, and tin ore.
40. Ferro alloys, including ferrotungsten, ferromolybdenum, ferromanganese, ferrovanadium, and ferrochrome.*
41. The following ores: Wolframite, scheelite, molybdenite, manganese ore, nickel ore, chrome ore, hematite iron ore, iron pyrites, copper pyrites and other copper ores, zinc ore, lead ore, arsenical ore, and bauxite.*
42. Maps and plans of any place within the territory of any belligerent, or within the area of military operations, on a scale of 4 miles to 1 inch or any larger scale, and reproductions on any scale, by photography or otherwise, of such maps or plans.

Schedule II. Conditional Contraband

1. Foodstuffs.
2. Forage and feeding stuffs for animals.
3. Oleaginous seeds, nuts, and kernels.
4. Animal, fish, and vegetable oils and fats, other than those capable of use as lubricants, and not including essential oils.
5. Fuel, other than mineral oils.
6. Powder and explosives not specially prepared for use in war.
7. Horseshoes and shoeing materials.
8. Harness and saddlery.
9. The following articles, if suitable for use in war: Clothing, fabrics for clothing, skins and furs utilizable for clothing, boots and shoes.
10. Vehicles of all kinds, other than motor vehicles, available for use in war, and their component parts.
11. Railway materials, both fixed and rolling stock, and materials for telegraphs, wireless telegraphs, and telephones.
12. Vessels, craft, and boats of all kinds; floating docks and their component parts; parts of docks.
13. Field glasses, telescopes, chronometers, and all kinds of nautical instruments.
14. Gold and silver in coin or bullion, paper money.

Of the classes of articles specified in the schedule of absolute contraband, only the ten numbered 1, 2, 5, 7, 11, 14, 15, 16, 22, and 24 were authorized by the Declaration of London. Articles of classes 12, 25, and 32 were transferred from the list of conditional contraband; while articles of classes 17, 19, 20, 29, 30, 33 and 41 and certain other materials were placed by the Declaration in the list of absolute non-contraband.

British Maritime Policy and Neutral Trade.—Before the war was a fortnight old the British Government declared the various waters of the North Atlantic safe for commerce with the exception of the North Sea, in which Germany had planted contact mines. With the German fleet driven for refuge into its fortified harbors and German shipping swept from the seas, Great Britain turned the vast resources of her sea power to the destruction of Germany's oversea commerce and the stoppage of her foreign sources of supplies of military value. Direct trade with the enemy she controlled absolutely, but to close the channels through contiguous neutral countries she was obliged to adopt a new and rigorous maritime policy directly in conflict with the interests of the neutral commercial nations. So long as the ports of Italy, Holland and the Scandinavian countries remained open to the unrestricted transit of enemy goods, the control of the sea was a barren victory. Hence the British orders-in-council abolished the *prima facie* presumption of innocence of trade between neutrals and in neutral bottoms, made ultimate destination the test of legitimacy, and extended the doctrine of continuous transport to both classes of contraband. They made also additions to the accepted specification of contraband so large and important as apparently to subvert the principles of international law, but claimed to be in reality justified by the immense modern development of motor and aerial transport, the diversity and scientific elaboration of modern war materials, and the complexity of modern military organization.

The policy laid down in the orders-in-council Great Britain sought to apply with the least possible detriment to neutral interests consistent with the attainment of her military ends. To the neutral countries of Europe she proposed the placing of embargoes on the exportation of raw materials, foodstuffs and other commodities capable of conversion to mil-

itary use. In August, Holland voluntarily prohibited the exportation of hay, grain, flour, horses, leather, potash, alcohol, and several other foodstuffs and raw materials; and the instinct of preparation against emergencies which prompted her to conserve her resources influenced likewise the other European neutrals. Besides Holland, voluntarily or under pressure, Denmark, Switzerland, Italy, Sweden, Norway, Spain, Portugal, Rumania and Bulgaria laid more or less comprehensive embargoes on foodstuffs, clothing, livestock, fuels, cotton, mineral oils, chemicals, arms and munitions of war, and other commodities, which comprised early in November some 340 separate articles. Such embargoes as were accompanied by satisfactory guarantees secured immunity for imports of the embargoed articles; on Nov. 9 the British Government informed the Department of State that as Norway, Sweden and Denmark had given satisfactory guarantees as to the non-exportation of contraband goods included in their lists of prohibited exports, interference with consignments of such goods to named persons in those countries would be restricted to verification of the ship's papers and cargo. But to the import trade of those countries suspected of lax enforcement of embargoes, and especially of those countries whose imports showed a sudden and suspicious rise, Great Britain applied the full rigor of her maritime policy.

The chief sufferer from the British policy was the United States. American trade with Germany and Austria-Hungary was substantially, and with Belgium absolutely, destroyed. Moreover, the buying power of the other European customers of the United States was seriously impaired. To these embarrassments the British policy added severe restrictions on the freedom of trade with neutrals, which further obstructed the markets for the most important commodities of export (*A. Y. B.*, 1914, p. 103). The British Government gave repeated assurances of the absolute freedom of cotton, even when consigned to belligerents, but shipping companies and marine underwriters accepted cotton cargoes only at hazardous rates. Foodstuffs enjoyed a more general immunity through guaranteed embargoes than most materials, but consignments not so protected had to stand the scrutiny of the British authorities. The treatment of consignments of copper exhibited most promptly and clearly the intent and implications of the British policy. Late in September the British authorities seized two cargoes of copper from the United States for Holland, alleged to be destined for the Krupp works at Essen; the Government requisitioned both cargoes and promptly remitted their full value to the American shippers. In October three shipments of copper consigned "to order" in Italy were detained at Gibraltar, Italy having prohibited the export but not the transit of copper; two of the consignments were subsequently released, but the third was held for the prize court, with a shipment of rubber carried by the same ship, the American steamer *Kroonland*. Before the close of the year 31 consignments of copper were seized, aggregating 19,350 tons and valued at upwards of $5,500,000. After the declaration of copper as absolute contraband on Oct. 29, Sir Cecil Spring-Rice, the British Ambassador, informed the Department of State that while the British Government did not intend to interfere with imports of copper to supply the normal consumption of neutral countries under adequate guaranties against reëxportation, it was determined to prevent artificial trade with Italy and other countries for transit to Germany. With regard to mineral oils, the British Government reaffirmed the same principle of action and followed a similar course (*A. Y. B.*, 1914, p. 103).

The British War Zone.—The impediments to neutral trade were not all the creation of British maritime policy. From the beginning of the war commercial shipping in the North Sea was exposed to grave danger of destruction by mines planted by the belligerents. Great Britain

deliberately abstained, and abstained entirely, from the use of mines during the first two months of the war outside British territorial waters, but eventually found it necessary to adopt countermeasures in order to cope with the German policy of mine-laying combined with

their submarine activity; a mine field was therefore laid across the southern portion of the North Sea in such a way as to guard the approaches to the English Channel and due public warning was given in accordance with the Hague Convention. (Mr. Asquith in the House of Commons, Nov. 17, 1914.)

On Nov. 3, 1914, the British Admiralty declared the whole North Sea a military area and warned neutral shipping of perils to navigation over a stretch of the open sea approximately 500 miles in length, as well as the sea approaches to the neutral ports of northern Europe. In justification of this unprecedented action, the Admiralty announcement declared that during the preceding week the Germans had "scattered mines indiscriminately in the open sea on the main trade route from America to Liverpool *via* the north of Ireland," through the agency of some merchant vessel flying a neutral flag, with consequent destruction of peaceful merchant ships and loss of life.

In these circumstances, having regard to the great interests entrusted to the British Navy, to the safety of peaceful commerce on the high seas, and to the maintenance within the limits of international law of trade between neutral countries, the Admiralty feel it necessary to adopt exceptional measures appropriate to the novel conditions under which this war is being waged.

They therefore give notice that the whole of the North Sea must be considered a military area. Within this area merchant shipping of all kinds, traders of all countries, fishing craft, and all other vessels will be exposed to the gravest dangers from mines which it has been necessary to lay and from warships searching vigilantly by night and by day for suspicious craft.

All merchant and fishing vessels of every description are hereby warned of the dangers they encounter by entering this area except in strict accordance with Admiralty directions. Every effort will be made to convey this warning to neutral countries and to vessels on the sea, but from Nov. 5 onward the Admiralty announce that all ships passing a line drawn from the northern point of the Hebrides through the Faroe Islands to Iceland do so at their own peril.

Ships of all countries wishing to trade to and from Norway, the Baltic, Denmark and Holland are advised to come, if inward bound, by the English Channel and the Straits of Dover. There they will be given sailing directions which will pass them safely, so far as Great Britain is concerned, up the east coast of England to the Faroe Islands, whence a safe route will, if possible, be given to Lindesnas Lighthouse.

From this point they should turn north or south, according to their destination, keeping as near the coast as possible. The converse applies to vessels outward bound.

By strict adherence to these routes the commerce of all countries will be able to reach its destination in safety, so far as Great Britain is concerned, but any straying even for a few miles from the course thus indicated may be followed by fatal consequences.

Mr. Asquith explained the purpose of the proclamation in the House of Commons on Nov. 17. Germany, he said, had not only violated the principle of the freedom of the seas for peaceful trading but had failed to observe the provisions of the Hague Convention relative to the laying of submarine mines.

The menace to peaceful shipping presented by these wholly illegal methods of waging war is so great that His Majesty's Government have been compelled to adopt the only possible means of protection, namely, to declare the whole North Sea to be a military area and to restrict all shipping crossing it to a narrow passage, along which the strictest supervision can be exercised. . . . His Majesty's Government are fully aware of the anxiety prevailing in the United States and other neutral countries on these subjects, and they trust that their policy will be fully understood. They are confident that public opinion in neutral countries will appreciate their earnest desire that there should be no interference with neutral trade provided the vital interests of Great Britain, which are at stake in the present conflict, are adequately maintained. Any interference by the British Navy is directed not to increase British trade or to diminish the trade of any neutral foreign country, but solely to prevent goods from reaching the enemy which would increase his power in the war against the British and allied forces.

The First American Protest.—The development of the British policy, however conscientiously and considerately enforced, entailed great and cumulative hardship to American commerce, in addition to that normally inseparable from war conditions. Not only were commercial interests grievously afflicted, but many great industries were depressed and disorganized by the loss of long established markets in Europe. Producers and exporters, steamship companies and marine underwriters, besought the Government for relief, and, as individual cases of detention arose, the

Department of State interposed vigorous protests which accelerated the action of the British authorities. Finally, on Dec. 26, 1914, the Department addressed to the British Government a formal note of protest, which, waiving for the time being objection to the British schedules of contraband, tendered complaints of the treatment of cargoes of both classes of contraband bound to neutral ports.

The Government of the United States, said the note, "has viewed with growing concern the large number of vessels laden with American goods destined to neutral ports in Europe which have been seized on the high seas, taken into British ports, and detained sometimes for weeks by the British authorities." Commerce between countries not belligerents should not be interfered with by those at war unless, and then only to the extent that, such interference is manifestly an imperative necessity to protect their national safety. With no lack of appreciation of the momentous nature of the struggle engaging Great Britain, and with no selfish desire to gain undue commercial advantage,

this Government is reluctantly forced to the conclusion that the present policy of His Majesty's Government toward neutral ships and cargoes exceeds the manifest necessity of a belligerent and constitutes restrictions upon the rights of American citizens on the high seas which are not justified by the rules of international law or required under the principle of self-preservation. . . .

Articles listed as absolute contraband, shipped from the United States and consigned to neutral countries, have been seized and detained on the ground that the countries to which they were destined have not prohibited the exportation of such articles. Unwarranted as such detentions are, in the opinion of this Government, American exporters are further perplexed by the apparent indecision of the British authorities in applying their own rules to neutral cargoes.

In the case of conditional contraband, the note continued, the policy of Great Britain appeared to be equally unjustified by the established rules of international conduct. American cargoes of foodstuffs and other articles of common use, admittedly conditional contraband, had been seized and detained, in spite of the presumption of innocent use because destined to neutral territory, without evidence which would warrant a reasonable belief that the shipments had in reality a belligerent destination, and in spite of embargoes laid by neutral countries. "Mere suspicion is not evidence, and doubts should be resolved in favor of neutral commerce, not against it." Reimbursement of owners after investigation has failed to establish an enemy destination does not entirely cure the effect on American foreign trade with neutral countries, which is injured as a whole through the hazard of the enterprise and the repeated diversion of goods from established markets.

That a consignment "to order" of articles listed as conditional contraband and shipped to a neutral port raises a legal presumption of enemy destination appears to be directly contrary to the doctrines previously held by Great Britain and thus stated by Lord Salisbury during the South African war:

"Foodstuffs, though having a hostile destination, can be considered as contraband of war only if they are for the enemy forces; it is not sufficient that they are capable of being so used, it must be shown that this was in fact their destination at the time of their seizure."

With this statement as to conditional contraband, the views of this Government are in entire accord, and upon this historic doctrine, consistently maintained by Great Britain when a belligerent as well as a neutral, American shippers were entitled to rely.

The Government of the United States readily admits the full rights of a belligerent to visit and search on the high seas the vessels of American citizens or other neutral vessels carrying American goods and to detain them when there is sufficient evidence to justify a belief that contraband articles are in their cargoes; but His Majesty's Government, judging by their own experience in the past, must realize that this Government cannot without protest permit American ships or American cargoes to be taken into British ports and there detained for the purpose of searching generally for evidence of contraband or upon presumptions created by special municipal enactments which are clearly at variance with international law and practice.

The British Preliminary Reply.—The British reply was prompt and conciliatory. Reserving detailed discussion of the issues raised by the United States for a subsequent note, Sir Edward Grey submitted in a note of Jan. 7 some "preliminary observations" intended to clear the ground

and remove apparent misconceptions. Returning the friendly assurances of the American protest, the British note concurred cordially in the principle stated therein, that interference with neutral trade should be limited strictly by the manifest necessity of a belligerent, "on the understanding that it admits our right to interfere when such interference is, not with *bona fide* trade between the United States and another neutral country, but with trade in contraband destined for the enemy's country." Whenever action unintentionally exceeded this principle, the British Government held itself ready to make redress.

As to the extent of British interference with trade, the note held, much misconception seemed to exist; the American protest attributed to British maritime policy effects upon American foreign trade and domestic industry far from the intention and against the desire of the British Government. Examining the question whether United States trade with neutral countries had been so seriously affected, Sir Edward Grey showed that exports from New York to Denmark, Sweden, Norway, Italy, and Holland were for the month of November, 1914, $21,018,000, against $8,772,000 for the same month of 1913. Further,

> That the existence of a state of war on such a scale has had a very adverse effect upon certain great industries, such as cotton, is obvious; but it is submitted that this is due to the general cause of diminished purchasing power of such countries as France, Germany and the United Kingdom, rather than to interference with trade with neutral countries.

With regard to the detention of copper, the note continued, the official returns for copper exports from the United States to the countries named above and other minor states in Europe for the period from the outbreak of the war to the end of the first three weeks of December and the corresponding period of 1913, were, respectively, 22,473,000 lb. and 71,632,000 lb. "With such figures, the presumption is very strong that the bulk of the copper consigned to these countries has recently been intended, not for their own use, but for that of a belligerent who cannot import it direct." It was an imperative necessity for the safety of Great Britain that import of copper not genuinely destined for neutral countries be stopped; and it was incredible that the Government of the United States, with these figures and examples before them, would question the propriety of taking suspected cargoes to a prize court, or wish "to strain the international code in favor of private interests so as to prevent Great Britain from taking such legitimate means for this purpose as are in her power." Again, with regard to the seizure of foodstuffs, the British Government admitted "that foodstuffs should not be detained and put into a prize court without presumption that they are intended for the armed forces or the government of the enemy." This rule, Sir Edward Grey asserted, had been adhered to in practice and the British Government intended to continue to apply it, though they could not "give an unlimited and unconditional undertaking in view of the departure by those against whom we are fighting from hitherto accepted rules of civilization and humanity and the uncertainty as to the extent to which such rules may be violated by them in future."

Between Aug. 4, 1914, and Jan. 3, 773 steamships left the United States for Holland, Denmark, Norway, Sweden and Italy; of these only 45 had cargoes or consignments placed in a prize court, while of the ships themselves only eight were placed in a prize court and one of these was already released. But under modern conditions, the note concluded, the right of search could be exercised only by bringing into port for examination vessels suspected of carrying contraband. Several cases had occurred, for example, in which rubber, in accordance with special instructions, had been shipped under another designation to escape notice; only by search in a port could such cases, when suspected, be discovered and proved.

> His Majesty's Government are prepared, whenever a cargo coming from the United States is detained, to explain the case on which such detention

has taken place, and would gladly enter into any arrangement by which mistakes can be avoided and reparation secured promptly, when any injury to the neutral owners of a ship or cargo has been improperly caused, for they are most desirous, in the interest both of the United States and of other neutral countries, that British action should not interfere with the normal importation and use by the neutral countries of goods from the United States.

Sequestration of Foodstuffs by the German Government.—The friendly assurances of the British note were but one of several elements which combined at the opening of the new year to encourage the hope of speedy reduction of the hindrances to American trade. A circular issued by the Treasury Department on Jan. 5 called the attention of shippers to the importance of preparing complete and accurate manifests, and announced a Government service intended to provide a reasonable measure of assurance to belligerents of the nature of export cargoes. On Jan. 7 the State Department announced the completion of arrangements between Great Britain and Italy and the Netherlands by which neutral trade was expected to suffer a minimum of molestation. In the Netherlands an Overseas Trust was formed for the receipt of imports, and the Allies assured the Netherlands Government that shipments, even of contraband, consigned to the monopoly would not be stopped; nor would shipments of foodstuffs or other necessaries of life consigned to merchants, unless the merchants were beyond a doubt media for delivery to Germany.

Matters were thus in train for improvement when the German Government took action which created new and disturbing conditions. On Jan. 26 the Federal Council at Berlin proclaimed the nationalization of food supplies and issued the following stringent regulations:

> All stocks of corn, wheat and flour are ordered seized by February 1.
>
> All business transacted in these commodities is forbidden from January 26.
>
> All municipalities are charged with the duty of setting aside suitable supplies of preserved meat.
>
> The owners of corn are ordered to report their stocks immediately, whereupon confiscation, at a fixed price, will follow.
>
> A Government distributing office for the regulation of consumption will be established, distribution being made according to the number of inhabitants.

As to the effect of these regulations on the exportation of American foodstuffs to Germany, Count von Bernstorff sought to reassure the United States Government by an immediate verbal pledge, reiterated in a formal note of Jan. 29:

> I now beg to state that the German Government gives formal assurance that foodstuffs imported from the United States will not be used by the Government or the military or naval authorities, and will not reach any contractors of the Government. The German Government guarantees that it will not interfere with the distribution of such foodstuffs by the American importers to the civilian population exclusively.

The Bundesrat gave effect to this assurance in an order of Feb. 6, modifying the original decree with respect to imported foodstuffs, but it was futile to check the inevitable development of British policy in consequence of the German measures of sequestration.

There was then at sea the American steamer *Wilhelmina*, which sailed from New York for Hamburg on Jan. 22 with the first cargo of foodstuffs to leave an American port for Germany since the outbreak of the war. On Feb. 2 Mr. Page, the American Ambassador at London, cabled the State Department that the British fleet had been ordered to treat cargoes of grain and flour for Germany as contraband, subject to seizure and confiscation. Two days later the British Foreign Office issued the following statement clearly suggesting this policy:

> The new German decree makes it evident that all grain and flour is to pass under the control of the German Government and must, therefore, when imported, be regarded as virtually consigned to the German Government or to authorities under their control.
>
> This creates a novel situation, and it is probable that if the destination and cargo of the *Wilhelmina* are as supposed, the cargo will, if the vessel is intercepted, be submitted to a prize court in order that the new situation created by the German decree may be examined and a decision reached upon it after full consideration.
>
> There is no question of taking any

proceedings against the vessel, and the owners of the vessel will be indemnified for any delay caused to it and the shippers of the cargo compensated for any loss caused to them by the action of the British authorities. . . .

The apparent intention, however, of the German Government to sink merchant ships by submarines, without bringing them into port or providing accommodation for their crews, and regardless of loss of civilian lives, and the attempt to effect this, even against a hospital ship, has raised very seriously the question whether Great Britain should adopt in retaliation more stringent measures against German trade.

The *Wilhelmina* entered Falmouth harbor voluntarily under stress of weather on Feb. 9, and the British authorities seized and held her cargo for the prize court.

The German War Zone.—Germany meanwhile had announced that policy of maritime terrorism which was to lead her to the verge of a rupture with the United States. The German submarine warfare against British merchant shipping was not a measure conceived and adopted on the spur of the moment in retaliation for the latest demonstration of the overwhelming advantage of sea power. It was primarily a policy dictated by the absolute impotence of the German battle fleet as a means of striking at the arch-enemy, England, and was so described by Admiral von Tirpitz, the German Minister of Marine, in an interview with a correspondent of the New York *Evening Sun* on Dec. 22, 1914. Admitting the hopeless inferiority of the German battle fleet, von Tirpitz suggested the possibilities of the submarine weapon, thus:

I believe that a war of submarines made on English merchant ships will have more effect than even an invasion of England by means of Zeppelins. . . . We have learned a great deal about submarines in this war. We thought that they would not be able to remain much longer than three days away from their base, as the crew would then necessarily be exhausted. But we soon learned that the larger type of these boats can navigate around the whole of England and can remain absent as long as a fortnight.

Germany demonstrated in several cases before the end of January, moreover, as the British memorandum on the *Wilhelmina* declared, that she was prepared to ignore the laws of naval warfare, as embodied in the Hague Convention, which limited the capacity of the submarine as a commerce destroyer by the requirements of visit and search and provision for the safety of crews.

The policy thus indicated was formally announced by the German Government in a proclamation of Feb. 4, establishing a war zone about the British Isles:

The waters around Great Britain, including the whole of the English Channel, are declared hereby to be included within the zone of war, and after the 18th inst. all enemy merchant vessels encountered in these waters will be destroyed, even if it may not be possible always to save their crews and passengers.

Within this war zone neutral vessels are exposed to danger since, in view of the misuse of the neutral flags ordered by the Government of Great Britain on the 31st ultimo and of the hazards of naval warfare, neutral vessels cannot always be prevented from suffering from the attacks intended for enemy ships.

The routes of navigation around the north of the Shetland Islands in the eastern part of the North Sea and in a strip thirty miles wide, along the Dutch coast, are not open to the danger zone.

With the war-zone proclamation was published a "memorandum of the Imperial German Government concerning retaliation against measures taken by England in violation of international law to stop neutral sea commerce to Germany." The memorandum charged that, although Great Britain had declared the Declaration of London to be binding on her naval forces, she had renounced it in its most important particulars. Further, she had violated the Declaration of Paris and her own decrees by seizing non-contraband German property on neutral ships and by taking from neutral ships as prisoners of war German subjects liable to military service. Finally, by declaring the entire North Sea a military area, she had, to a certain extent, established a blockade of neutral coasts and ports, in violation of all international law. All these measures had the obvious purpose, continued the memorandum, to strike, not only at Germany's military strength, but at her economic life as well, and "finally by starvation to doom the entire population of Germany to destruction."

For her violations of international law Great Britain pleads the vital interests which the British Empire has at stake, and the neutral powers seem to satisfy themselves with a theoretical protest. Therefore, in fact they accept the vital interests of belligerents as sufficient excuse for every method of warfare.

Germany must now appeal to these same vital interests, to its regret. It therefore sees itself forced to military measures aimed at England in retaliation against the English procedure. Just as England has designated the area between Scotland and Norway as an area of war, so Germany now declares all the waters surrounding Great Britain and Ireland, including the entire English Channel, as an area of war, and thus will proceed against the shipping of the enemy. . . . Neutrals are therefore warned against further entrusting crews, passengers, and wares to such ships. Their attention is also called to the fact that it is advisable for their ships to avoid entering this area, for even though the German naval forces have instructions to avoid violence to neutral ships, in so far as they are recognizable, in view of the misuse of neutral flags ordered by the British Government and the contingencies of naval warfare, their becoming victims of torpedoes directed against enemy ships cannot always be averted. . . .

It is to be expected that the neutral powers will show no less consideration for the vital interests of Germany than for those of England, and will aid in keeping their citizens and the property of the latter from this area.

The alleged order of the British Admiralty for the systematic use of neutral flags on British merchant vessels within the radius of action of German submarines was substantiated only by the German declaration in this memorandum and subsequent notes. Such color as the charge possessed was given by the action of the Cunard liners *Orduna* and *Lusitania* in flying the American flag in British waters shortly after the first evidences of the German submarine policy (the *Orduna* out of Queenstown on Jan. 31 and the *Lusitania* when approaching Liverpool on Feb. 6). In reply to a prompt protest by the United States, the British Government denied in a note of Feb. 19 the existence of such an order or any intention of advising British shipping to use foreign flags as a general practice or to resort to them except as a legitimate *ruse de guerre* to escape capture or destruction.

From this point British impediments to the freedom of trade became for many months subordinate among the international problems of the United States to the German submarine campaign. The history of the crisis between the United States and Germany is given in a subsequent section.

The British Argument on Interference with Neutral Trade.—While the German war-zone proclamation and the flag incidents obscured in public interest the primary issue with Great Britain, Sir Edward Grey submitted his promised detailed argument in reply to the American protest against British interference with neutral trade. The British note of Feb. 10 was a lengthy document, elaborating the arguments of the preliminary answer and dealing with the new conditions created by subsequent events. First, Sir Edward Grey examined the trade statistics of the United States for evidence of British responsibility for the depression alleged in the American protest, and found that:

> The general result is to show convincingly that the naval operations of Great Britain are not the cause of any diminution in the volume of American exports, and that if the commerce of the United States is in the unfavorable condition which your Excellency describes, the cause ought in fairness to be sought elsewhere than in the activities of His Majesty's naval forces.

Further, from the statistics of trade with individual countries,

> the inference may fairly be drawn . . . that not only has the trade of the United States with the neutral countries in Europe been maintained as compared with previous years but also that a substantial part of this trade was in fact trade intended for the enemy countries going through neutral ports by routes to which it was previously unaccustomed.

Turning to the legal questions, Sir Edward Grey proceeded to show the consistency of British policy and practice with the general fundamental principles of international law and regard for the rights and interests of the United States. The means of exercising the ancient and undisputed right of a belligerent to capture contraband goods destined for the enemy, he said,

> alter and develop with the changes in the methods and machinery of com-

merce. . . . The advent of steam power has rendered it as easy for a belligerent to supply himself through the ports of a neutral contiguous country as through his own, and has therefore rendered it impossible for his opponent to refrain from interfering with commerce intended for the enemy merely because it is on its way to a neutral port.

The United States experienced in the Civil War the necessity of countering new devices for despatching contraband to an enemy by new methods of applying the fundamental principle of the right of capture. It was then that the doctrine of continuous voyage was first advanced, and it met with no protest from Great Britain, although the losses and inconvenience of this new but legitimate development in the application of the old rôle fell principally upon British ships and cargoes. The United States encountered also the difficulty of distinguishing between goods of enemy destination and goods of *bona fide* neutral commerce. The opportunities of a belligerent for obtaining supplies through neutral ports, Sir Edward Grey declared, are now far greater than they were 50 years ago, and in the present struggle they are enhanced by geographical conditions and developed by elaborate organization and unstinted expenditure.

If British belligerent rights are to be maintained, the note continued, it was of first importance to distinguish innocent neutral trade from enemy trade, and to this end it was essential that the British Government should be entitled to make careful inquiry as to the destination of particular shipments even at the risk of some slight delay. The only alternatives were the abandonment of belligerent rights or indiscriminate captures of neutral goods and their detention during prize-court proceedings.

> It may well be that the system of making such inquiries is to a certain extent a new introduction, in that it has been practiced to a far greater extent than in previous wars; but if it is correctly described as a new departure, it is a departure which is wholly to the advantage of neutrals, and which has been made for the purpose of relieving them so far as possible from loss and inconvenience.

In a note of Nov. 7, 1914, the United States advanced the opinion that

> the belligerent right of visit and search requires that the search should be made on the high seas at the time of the visit, and that the conclusion of the search should rest upon the evidence found on the ship under investigation and not upon circumstances ascertained from external sources.

This principle Sir Edward Grey held to be impossible in modern times and inconsistent with the practice of the United States in the Civil War or the Spanish War.

> The necessity for giving the belligerent captor full liberty to establish by all the evidence at his disposal the enemy destination with which the goods were shipped was recognized in all the leading decisions in the prize courts of the United States during the Civil War.

Sir Edward Grey maintained the legitimacy of the practice of taking vessels into port for search, and reminded the United States that the Federal Government had encountered the necessity during the Civil War.

> No power in these days can afford during a great war to forego the exercise of the right of visit and search. Vessels which are apparently harmless merchantmen can be used for carrying and laying mines, and even fitted to discharge torpedoes. Supplies for submarines can without difficulty be concealed under other cargoes. The only protection against these risks is to visit and search thoroughly every vessel appearing in the zone of operation, and if the circumstances are such as to render it impossible to carry it out at the spot where the vessel was met with, the only practicable course is to take the ship to some more convenient locality for the purpose. To do so is not to be looked upon as a new belligerent right, but as an adaptation of the existing right to the modern conditions of commerce.

In answer to the complaint of the United States on the seizure and detention of conditional contraband destined to neutral ports, Sir Edward Grey admitted that the order-in-council of Aug. 20, 1914, made no distinction between absolute and conditional contraband in the application of the doctrine of continuous voyage, and imposed upon neutral owners drastic conditions as to the burden of proof of the guilt or innocence of the shipment. This policy was modified, however, as the result of negotiations with the United

States, by the order-in-council of Oct. 29, which admitted in large measure the principle of non-interference with conditional contraband on its way to a neutral port, and maintained the right to seize only when the ship's papers afford no information as to the person for whom the goods were intended or when the goods were addressed to a person in the enemy territory.

It is only reasonable that a belligerent should be entitled to regard as suspicious cases where the shippers of the goods do not choose to disclose the name of the individual who is to receive them. In the peculiar circumstances of the present struggle, where the forces of the enemy comprise so large a proportion of the population, and where there is so little evidence of shipments on private as distinguished from Government account, it is most reasonable that the burden of proof should rest upon the claimant.

Turning finally to the difficult question of the contraband character of foodstuffs, the note readily admitted that Great Britain had been the champion of the principle that a belligerent should abstain from interference with the foodstuffs intended for the civil population. But it was open to doubt that the existing rules with regard to conditional contraband were effective for their purpose of protecting supplies intended for the civil population or suitable to the conditions present.

An elaborate machinery has been organized by the enemy for supply of foodstuffs for the use of the German Army from overseas. Under these circumstances it would be absurd to give any definite pledge that in cases where the supplies can be proved to be for the use of the enemy forces they should be given complete immunity by the simple expedient of despatching them to an agent in a neutral port.

The reason for drawing a distinction between foodstuffs intended for the civil population and those for the armed forces or enemy Government disappears when the distinction between the civil population and the armed forces itself disappears. In any country in which there exists such tremendous organization for war as now obtains in Germany, there is no clear division between those whom the Government is responsible for feeding and those whom it is not. Experience shows that the power to requisition will be used to the fullest extent in order to make sure that the wants of the military are supplied, and however much goods may be imported for civil use it is by the military that they will be consumed if military exigencies require it, especially now that the German Government have taken control of all the foodstuffs in the country.

In conclusion Sir Edward Grey described the efforts of the British Government to deal leniently with the interests of neutrals and reiterated its desire to safeguard neutral rights.

It will still be our endeavor to avoid injury and loss to neutrals; but the announcement by the German Government of their intention to sink merchant vessels and their cargoes without verification of their nationality or character, and without making any provision for the safety of non-combatant crews or giving them a chance of saving their lives, has made it necessary for His Majesty's Government to consider what measures they should adopt to protect their interests. It is impossible for one belligerent to depart from rules and precedents and for the other to remain bound by them.

The "Wilhelmina" Case.—The status of the *Wilhelmina's* cargo now became of crucial moment to the three parties to the triangular controversy. To Great Britain it prefigured the measures of reprisal to be undertaken against the German warfare on British shipping. To the United States, caught between two powerful belligerents at death grips, it was the index to important consequences to American trade. To Germany it indicated the ultimate application of overwhelming sea power to the stoppage of her overseas sources of supply. The implications of the *Wilhelmina* case were to Germany of the most profound importance, and the German Government hastened to urge the United States to defend its right to ship foodstuffs to Germany for civilian use.

Count von Bernstorff explained in a note of Feb. 13 that the confiscation of food supplies ordered by the German Government extended only to "wheat, rye, oats and barley flour." "Grain or flour imported from abroad after Jan. 31" were expressly excepted from the stipulations of the decree by the order of Feb. 6, which, in order to leave no room for doubt, rescinded the original regulation for the sale of imported cereals and flours exclusively to municipalities or certain desig-

nated organizations, although this provision was intended solely to prevent speculation and to direct imported cereals into channels to supply private consumption. The German Government, the Ambassador declared,

> is amenable to any proposition looking to control by a special American organization under the supervision of the American consular officers, and, if necessary, will itself make a proposition in that direction. . . . Hence is it absolutely assured that imported food products will be consumed by the civilian population in Germany exclusively, and there remains no doubt upon which England can prevent the exportation of food products from America to Germany for the use of civilians.
>
> The Imperial Government expresses the firm hope that the American Government will stand on its right in this matter.

On Feb. 15 the German Ambassador presented another note, in which Germany offered to recede from her announced submarine campaign in return for the submission of Great Britain, voluntarily or under the compulsion of neutral powers, to the rules relating to conditional contraband, especially foodstuffs, laid down in the Declarations of Paris and London. The United States Government had already intervened on behalf of the owners to stay the prize-court proceedings against the *Wilhelmina's* cargo for the submission of evidence as to its innocent destination. This evidence was promptly transmitted to the British Government, and with it the various notes of the German Ambassador.

Sir Edward Grey replied to the representations of the United States in a note of Feb. 19, coincident with the note on the use of the American flag, which arraigned the German Government for its many violations of the laws of war and the instincts of humanity and absolved Great Britain from submission to the rules openly set at defiance by her enemy. The seizure of the *Wilhelmina's* cargo, the note declared, was dictated in the first place by consignment to Hamburg, one of the municipalities amenable to the decree of Jan. 25, which declared all grain and flour imported into Germany after Jan. 31 deliverable only to municipal authorities or to certain organizations under direct government control. It was ordered before the publication of the rescinding decree of Feb. 6, but the prize court was the most suitable agency to investigate "how far the ostensible exception of imported supplies from the general government monopoly of all grain and flour" may affect the contraband nature of the shipment. But the seizure, Sir Edward Grey continued, was justified on other grounds.

> The German Government cannot have it both ways. If they consider themselves justified in destroying by bombardment the lives and property of the peaceful civil inhabitants of English open towns and watering places, and in seizing and sinking ships and cargoes of conditional contraband on their way thither, on the ground that they are consigned to a fortified place or base, *a fortiori*, His Majesty's Government must be at liberty to treat Hamburg, which is in part protected by fortifications at the mouth of the Elbe, as a fortified town and base of operations and supply for the purposes of Article 34 of the Declaration of London.

The British Government, said Sir Edward Grey, had not so far declared foodstuffs to be absolute contraband or interfered with shipments on neutral vessels not destined for enemy forces or governments.

> In so acting they have been guided by the general principle, of late universally upheld by civilized nations and observed in practice, that the civil populations of countries at war are not to be exposed to treatment rightly reserved for combatants. This distinction has to all intents and purposes been swept away by the novel doctrines proclaimed and acted upon by the German Government.

Without dwelling on the treatment meted out to the civil population of Belgium, the British Government held that when Germany destroyed innocent ships and lives by sowing mines upon the high seas, when German cruisers deliberately fired upon and killed British men, women and children in open English towns, and when German airships bombarded defenseless country towns and villages, it was open to them "to take retaliatory measures even if such measures were of a kind to involve pressure on the civil population . . . of their enemies." The British Government had refrained from reprisals

for these attacks on defenseless citizens. Now, however, further steps in the same direction were announced; British merchant vessels had been torpedoed at sight and without warning and the same treatment was threatened not only to all British ships but to any neutral vessels that might happen to be found in British waters.

> Faced with this situation His Majesty's Government consider it would be altogether unreasonable that Great Britain and her allies should be expected to remain indefinitely bound, to their great detriment, by rules and principles of which they recognize the justice, if impartially observed as between belligerents, but which are at the present moment openly set at defiance by their enemy.
>
> If, therefore, His Majesty's Government should hereafter feel constrained to declare foodstuffs absolute contraband, or take other measures for interfering with German trade by way of reprisals, they confidently expect that such action will not be challenged on the part of neutral states by appeals to laws and usages of war whose validity rests on their forming an integral part of that system of international doctrine which, as a whole, their enemy frankly boasts the liberty and intention to disregard, so long as such neutral states cannot compel the German Government to abandon methods of warfare which have not in recent history been regarded as having the sanction of either law or humanity.

American Suggestions for Compromise.—Meanwhile, in a note of Feb. 10, the United States had entered a vigorous assertion of neutral rights against the threatened perils of the German war-zone decree, and had warned the German Government that "if the commanders of German vessels of war . . . should destroy on the high seas an American vessel or the lives of American citizens, . . . the United States would be constrained to hold the Imperial Government of Germany to a strict accountability for such acts of their naval authorities" (see *infra*). Germany, in a note of the 16th, while reiterating her desire to conduct her warfare against British shipping without infringing neutral rights or destroying neutral lives or property, specifically disclaimed responsibility for "accidents" which might occur to neutral vessels in the war zone; she declared her willingness, however, to "draw the necessary conclusions" from the situation which would be created "should the American Government . . . find a way to bring about the observation of the Declaration of London and thereby to render possible for Germany the legitimate supply of foodstuffs and industrial raw materials." It was now for the United States to act upon this suggestion, and on Feb. 20 Secretary Bryan addressed to Great Britain and Germany identic notes submitting a proposed basis of settlement, in the nature of "a *modus vivendi* based upon expediency rather than legal right" and committing the United States to neither admission nor denial of "any belligerent or neutral right established by the principles of international law." It was proposed that both Great Britain and Germany should agree: (1) to sow no floating mines whatever and to plant no anchored mines on the high seas except within cannon range of harbors for defensive purposes only, such mines to bear the stamp of the government planting them and to be so constructed as to become harmless if separated from their moorings; (2) to abandon the use of submarines to attack merchant vessels of any nationality except to enforce the right of visit and search; and (3) to prohibit the use of neutral flags by merchant vessels for the purpose of disguise or *ruse de guerre*. Next, it was proposed that Germany should agree that all importations of foodstuffs from the United States, and from such other neutral countries as might so request, should not be requisitioned by the Government for any purpose whatever or be diverted to the use of the armed forces of Germany, but should be consigned to agencies to be designated by the United States Government for entire charge and control of the receipt of such importations and their distribution to properly licensed retail dealers for sale solely to noncombatants. Finally, it was proposed that Great Britain should agree that foodstuffs should not be declared absolute contraband, and that shipments of foodstuffs consigned to such designated American agencies in Germany should not be interfered with or de-

tained by the British authorities.

Germany, in a note of March 1, gave a qualified acceptance of the proposed agreement. She was prepared to accept the restrictions with regard to the use of mines, with the exception that it did not appear to her "feasible for the belligerents wholly to forego the use of anchored mines for offensive purposes." She was ready to undertake not to use submarines to attack merchant ships of any flag except when necessary to enforce the right of visit and search, contingent upon the abandonment of the use of neutral flags and other neutral distinctive marks on enemy ships, and, as a matter of course, of the policy of arming merchant vessels and encouraging resistance by force. Further, she was prepared to adopt the suggested mode of guaranty that foodstuffs imported by sea either directly or through neutral ports should be used exclusively by non-combatants. She insisted, however, that the enemy governments must "permit the free entry into Germany of the raw material mentioned in the free list of the Declaration of London, and treat materials included in the list of conditional contraband according to the same principles as food and foodstuffs." Having thus defined its attitude, the German Government reserved a definite statement on the American proposals pending information of the obligations the British Government was willing to assume.

The British Blockade.—This information was immediately forthcoming in a statement read by Prime Minister Asquith in the House of Commons on March 1 and submitted simultaneously to the neutral governments as a joint communication of Great Britain and France. The German war-zone decree, which it was in the power of Germany to enforce only by submarine agency, was, said the note, in effect "a claim to torpedo at sight, without regard to the safety of the crew or passengers, any merchant vessel under any flag."

The German declaration substitutes indiscriminate destruction for regulated captures. Germany has adopted this method against the peaceful trader and the non-combatant, with the avowed object of preventing commodities of all kinds, including food for the civilian population, from reaching or leaving the British Isles or northern France.

Her opponents are, therefore, driven to frame retaliatory measures in order in their turn to prevent commodities of any kind from reaching or leaving Germany. These measures will, however, be enforced by the British and French Governments without risk to neutral ships or neutral or non-combatant lives, and in strict observation of the dictates of humanity. The British and French Governments will, therefore, hold themselves free to detain and take into port ships carrying goods of presumed enemy destination, ownership, or origin. It is not intended to confiscate such vessels or cargoes unless they would otherwise be liable to confiscation. Vessels with cargoes which sailed before this date will not be affected.

The measures announced in the Anglo-French note plainly indicated a blockade of the German coast. But Mr. Asquith declared that the words "blockade" and "contraband" were purposely omitted from the statement because Germany had "forfeited all rights to diplomatic terms"; "neither is the alliance," he continued, "to be strangled with a network of judicial niceties." Moreover, the British note was presented with the assurance that it was not to be regarded as a reply to the American suggestions for compromise with Germany, which were receiving the careful consideration of the Allies' governments. Arguing from these contradictions some slight remaining possibility of a settlement, the United States Government transmitted Germany's qualified acceptance to the British Foreign Office, and followed it on March 5 with an identic note of inquiry to Great Britain and France on the proposed embargo on German commerce.

The course of action indicated in the joint declaration, the note pointed out, was unknown to international law. In proposing to take into custody all ships trading with Germany, the Allies claimed a right pertaining only to a state of blockade. Yet they proposed at the same time to treat ships and cargoes as if no blockade existed. Neutrals had thus no standard by which to measure their rights or to avoid danger to their ships and cargoes. The Allied powers should declare, the note urged,

whether they relied upon the rules governing a blockade or the rules applicable when no blockade exists. Further, while admitting that modern methods and weapons of naval warfare might make former means of maintaining a blockade a physical impossibility, the United States insisted that some limit should be set to the "radius of activity," especially if the course of action proposed by the Allies could be construed to be a blockade.

That it was a blockade Sir Edward Grey admitted in his reply of March 13 to the American suggestions for compromise. From the German reply, he said, it was not understood "that the German Government are prepared to abandon the practice of sinking British merchant vessels by submarines," while it was evident that they would not abandon the use of mines for offensive purposes. This being so, it might appear a sufficient reply merely to take note of the German answer. But the British Government desired to take the opportunity of making a fuller statement of the whole position and of their feeling with regard to it. Recognizing the desire of the United States to see the war conducted in accordance with the rules of international law and the dictates of humanity, Sir Edward Grey affirmed that neither the military nor the naval forces of Great Britain had laid to their charge any improper proceedings, either in the conduct of hostilities or in the treatment of prisoners or wounded. Against Germany, on the other hand, he presented six counts: (1) the sufferings inflicted on the defenseless civil population of Belgium and northern France under German military occupation; (2) the barbarous treatment of British prisoners and the hardships of German prison camps; (3) the sowing of mines on the high seas; (4) the sinking of prizes as a general practice, including neutral vessels, like the *William P. Frye*, carrying foodstuffs to unfortified British ports, and the sinking of British ships by torpedo without warning, through which a number of innocent and defenseless victims had lost their lives; (5) the bombardment of open coast towns by ships of war; and (6) the bombardment of places of no military importance by aircraft. In all these respects, Sir Edward Grey declared, but two criticisms had been made on British action. He admitted that the British Admiralty had laid some anchored mines on the high seas, but not until long after the Germans had made it a regular practice and then only with every precaution to remove the hazard of drifting mines. To the charge that in seizing the cargo of the *Wilhelmina* the British Government had repudiated a traditional British view of international law, Sir Edward Grey replied by referring to the special considerations outlined in his note of Feb. 19. Further, he cited Bismarck's support of the view, presumably therefore "not repugnant to German morality," that "to stop the food of the civil population is a natural and legitimate method of bringing pressure to bear on an enemy country." Finally, he claimed the rights arising from belligerent action in the nature of blockade.

Inasmuch as the blockade of all foodstuffs is an admitted consequence of blockade, it is obvious that there can be no universal rule based on considerations of morality and humanity which is contrary to this practice. The right to stop foodstuffs destined for the civil population must therefore in any case be admitted if an effective "cordon" controlling intercourse with the enemy is drawn, announced and maintained. . . .

The Government of Great Britain have frankly declared, in concert with the Government of France, their intention to meet the German attempt to stop all supplies of every kind from leaving or entering British or French ports by themselves stopping supplies going to or from Germany. For this end, the British fleet has instituted a blockade effectively controlling by cruiser "cordon" all passage to and from Germany by sea. The difference between the two policies is, however, that while our object is the same as that of Germany, we propose to attain it without sacrificing neutral ships or non-combatant lives, or inflicting upon neutrals the damage that must be entailed when a vessel and its cargo are sunk without notice, examination, or trial. I must emphasize again that this measure is a natural and necessary consequence of the unprecedented methods repugnant to all law and morality which have been described above which Germany began to adopt at the very outset of the war and the effects of which have been constantly accumulating.

With this note the British Government delivered on March 15 a second communication, replying to the American note of inquiry and transmitting a copy of the order-in-council of March 11 which defined and prescribed the measures adopted, in the exercise of an "unquestioned right of retaliation," "to prevent commodities of any kind from reaching or leaving Germany." The order applied to all vessels sailing after March 1, not only to and from German ports, but also to and from neutral ports. In condensed form its provisions were as follows:

(1) Every merchant vessel bound for a German port, unless given a pass enabling her to proceed to some neutral or Allied port, must discharge her cargo in a British port; subject to requisition by the Crown, non-contraband goods so discharged shall be restored to the persons entitled thereto under the direction of the prize court.

(2) Every merchant vessel sailing from a German port must discharge all goods laden at such port in a British or Allied port; subject to requisition by the Crown, goods so discharged in a British port shall be detained or sold under the direction of the prize court. Neutral property laden at such enemy port shall be released upon application of the Crown; the proceeds of the sale of goods shall not be paid out of court until the conclusion of peace except upon application of the Crown, unless it be shown that the goods had become neutral property before the issue of this order.

(3) Every merchant vessel bound for a neutral port carrying goods of enemy ownership or destination may be required to discharge such goods in a British or Allied port; subject to requisition by the Crown, non-contraband goods so discharged shall be restored to the persons entitled thereto under the direction of the prize court. This provision does not apply to vessels carrying goods laden at a German port.

(4) Every merchant vessel sailing from a neutral port carrying goods of enemy origin or ownership may be required to discharge such goods in a British or Allied port; subject to requisition by the Crown, goods so discharged in a British port shall be detained or sold under the direction of the prize court. Neutral property of enemy origin shall be released on application of the Crown; the proceeds of the sale of goods shall be held as provided in (2) above.

(5) Any person claiming to be interested in or to have any claim in respect of any goods, not being contraband of war, placed in the custody of the marshal of the prize court under this order, or in the proceeds of such goods, may forthwith issue a writ in the prize court against the proper officer of the Crown and apply for an order that the goods should be restored to him, or that their proceeds should be paid to him, or for such other order as the circumstances of the case may require.

(6) A merchant vessel which proceeds to an enemy port after clearing from a British or Allied port for a neutral port or receiving a pass to proceed to a neutral port, shall, if captured, be liable to condemnation.

(7) Nothing in this order shall be deemed to effect the liability of any vessel or goods to capture or condemnation independently of this order.

(8) Nothing in this order shall prevent relaxation of its provisions in respect to the merchant vessels of any country which declares that no commerce of German destination, origin or ownership shall enjoy the protection of its flag.

In the accompanying note Sir Edward Grey referred the United States Government to the text of the order-in-council for the resolution of the perplexities of the earlier statements. "Subject to the paramount necessity of restricting German trade," he said, "His Majesty's Government have made it their first aim to minimize inconvenience to neutral commerce." Wide discretion was given the prize court in dealing with neutral trade and full provision was made to secure and facilitate the claims of neutral owners. The instructions to be issued to the fleet and executive officers for the enforcement of the order would impress upon them the necessity of acting with the utmost dispatch and consideration compatible with the object in view, "which is, succinctly stated, to establish a blockade to prevent vessels from carrying goods for or coming from Germany."

His Majesty's Government has felt most reluctant at the moment of initiating a policy of blockade, to exact from neutral ships all the penalties attaching to a breach of blockade. In their desire to alleviate the burden which the existence of a state of war at sea must inevitably impose on neutral sea-borne commerce, they declare their intention to refrain altogether from the exercise of the right to confiscate ships or cargoes which belligerents have always claimed in respect of breaches of blockade. They restrict their claim to the stopping of cargoes destined for or coming from the enemy's territory.

It was not intended, the note concluded, to interfere with neutral vessels carrying non-contraband enemy

cargo outside European waters, including the Mediterranean.

An inevitable concomitant of the blockade order was a further extension of the British lists of contraband by an order-in-council of March 11 (see *supra*). While by this order cotton seed and all cotton-oil products were declared conditional contraband, the British Government continued to adhere to its policy of special consideration for raw cotton. For the relief of American exporters under contract for the delivery of cotton to the neutral countries of northern Europe, they granted a special temporary suspension of the embargo, announced by Sir Cecil Spring-Rice on March 8. By this arrangement the British Government guaranteed free passage, or purchase at the contract price if stopped, to properly certified consignments of cotton to neutral ports for which contracts of sale and freight engagements had been made before March 2, provided the ship sailed not later than March 31; and similar treatment to cotton insured before March 2, provided it was loaded before March 16. To ships or cargoes consigned to enemy ports the blockade order applied without discrimination, but the British Government engaged to purchase at invoiced value shipments of cotton made before March 2, or before the announcement of the embargo on German commerce. In the House of Commons on April 14 the British Government announced its decision against declaring cotton contraband, on the ground that the military advantages were insufficient to render such a step expedient, and it adhered to this decision for five months in the face of an insistent popular demand for the stoppage of Germany's supply of the raw material for munitions manufacture.

American Admonitions on Belligerent Rights.—In the British blockade, as prefigured in the order-in-council, neutral trade encountered a new menace. It was unquestionably within the belligerent rights of Great Britain to stop all direct trade with Germany by a blockade properly established and effectively enforced. It was only open to question whether an effective blockade of German ports, according to the established standards, could be maintained under the new conditions of naval warfare. Great Britain made no pretense of establishing the old form of "close" blockade, but adopted a more secure method, logically derived from regular precedent and equally effective with the old form, granted sufficient naval force to close the distant approaches to enemy ports. The British blockade, however, as defined in the order-in-council, included every port of possible access to German territory, and the order announced in guarded language a possible blockade of trade with neutral countries in non-contraband goods of enemy ownership or origin. The United States Government was ready to concede necessary modifications in the practice of blockade, but it promptly took occasion to deny, in a note of March 30, the sweeping belligerent rights over neutral commerce cautiously alleged by the British Government.

The blockade order-in-council, said the note, "would constitute, were its provisions to be actually carried into effect as they stand, a practical assertion of unlimited belligerent rights over neutral commerce within the whole European area, and an almost unqualified denial of the sovereign rights of the nations now at peace." The belligerent rights of visit and search, of capture and condemnation of neutral vessels engaged in unneutral or contraband service, and of blockade, "have hitherto been held to be the only permissible exceptions to the principle of universal equality of sovereignty on the high seas" as between belligerents and neutrals. Great Britain had often and explicitly held that the rules of the Declaration of Paris of 1856, among them that "free ships make free goods," represent the best usage of naval warfare. She would not now deny that

> it is a rule sanctioned by general practice that, even though a blockade should exist and the doctrine of contraband as to unblockaded territory be rigidly enforced, innocent shipments may be freely transported to and from the United States through neutral countries to belligerent territory, without being subject to the penalties of contraband

traffic or breach of blockade, much less to detention, requisition, or confiscation. . . .

No claim on the part of Great Britain of any justification for interfering with the clear rights of the United States and its citizens as neutrals could be admitted. To admit it would be to assume an attitude of unneutrality toward the present enemies of Great Britain, which would be obviously inconsistent with the solemn obligations of this Government in the present circumstances. And for Great Britain to make such a claim would be for her to abandon and set at naught the principles for which she has consistently and earnestly contended in other times and circumstances.

The novel and quite unprecedented feature of the British blockade, the note continued, "is that it embraces many neutral ports and coasts, bars access to them, and subjects all neutral ships seeking to approach them" to the same risks and penalties as vessels bound for enemy ports. Such limitations, risks and liabilities placed upon the ships of a neutral power are a distinct invasion of its sovereign rights.

The Government of the United States is, of course, not oblivious to the great changes which have occurred in the conditions and means of naval warfare since the rules hitherto governing legal blockade were formulated. It might be ready to admit that the old form of "close" blockade, with its cordon of ships in the immediate offing of the blockaded ports is no longer practicable in the face of an enemy possessing the means and opportunity to make an effective defense by the use of submarines, mines, and air craft; but it can hardly be maintained that, whatever form of effective blockade may be made use of, it is impossible to conform at least to the spirit and principles of the established rules of war.

If the necessities of the case should seem to render it imperative that the cordon of blockading vessels be extended across the approaches to any neighboring neutral port or country it would seem clear that it would still be easily practicable to comply with the well-recognized and reasonable prohibition of international law against the blockading of neutral ports, by according free admission and exit to all lawful traffic with neutral ports through the blockading cordon. This traffic would, of course, include all outward-bound traffic from the neutral country and all inward-bound traffic to the neutral country, except contraband in transit to the enemy.

The Scandinavian ports, the note pointed out, were not only open to American trade, but were also free, so far as the enforcement of the order-in-council was concerned, "to carry on trade with the German Baltic ports, although it is an essential element of blockade that it bear with equal severity upon all neutrals." Hence the United States Government inferred that the commanders of the blockading squadron would be instructed to avoid a method of enforcement which would "impose restrictions upon neutral trade more burdensome than those which have been regarded as inevitable when the ports of a belligerent are actually blockaded by the ships of its enemy."

In conclusion the note asserted the determination of the United States Government to seek full reparation for all infringements of American rights.

The possibilities of serious interruption of American trade under the order-in-council are so many, and the methods proposed are so unusual, and seem liable to constitute so great an impediment and embarrassment to neutral commerce, that the Government of the United States, if the order-in-council is strictly enforced, apprehends many interferences with its legitimate trade which will impose upon His Majesty's Government heavy responsibilities for acts of the British authorities clearly subversive of the rights of neutral nations on the high seas. It is, therefore, expected that His Majesty's Government, having considered these possibilities, will take the steps necessary to avoid them, and, in the event that they should unhappily occur, will be prepared to make full reparation for every act which under the rules of international law constitutes a violation of neutral rights.

Enforcement of the British Blockade.—While the United States Government declined to recognize the right of Great Britain to interfere with legitimate commerce between neutrals or with shipments of non-contraband goods even when ultimately destined for Germany, the commercial advisers of the Department of State informally consulted with the British Embassy in the interests of those shippers who desired to conform with the requirements of the blockade order-in-council, and for their benefit Sir Cecil Spring-Rice issued on May 3 a statement of certain recommended modes of procedure to facilitate *bona fide* neutral commerce. The enforcement of the block-

ade, however, notwithstanding the special expedients and exemptions sanctioned by the British authorities, inevitably multiplied the impediments to American trade with the neutrals of northern Europe. From the beginning of the war to the signing of the blockade order on March 11, a period of over seven months, 35 vessels carrying American cargoes were detained in British ports. During the last three weeks of March, 73 such vessels, bound in practically all cases from American to Scandinavian ports, were diverted to or voluntarily called at the single port of Kirkwall, in the Orkneys; and, according to incomplete records, similar detentions at Kirkwall numbered 113 in April, 56 in May, and 33 between June 1 and 16, the periods of detention ranging from a few hours to 33 days (American note of Oct. 21, App. 2.). In many cases the attendant circumstances, as described in an appendix to the American note of Oct. 21, aggravated the grievances of the American shippers. Vessels with cargoes and papers requiring but brief time for examination were held for prolonged periods and then released without the institution of prize-court proceedings. Detentions were made without evidence amounting to probable cause, and because of the manner in which shipments were consigned. Vessels were held for reconsignment of their cargoes to a consignee in a neutral country designated by the British Government, and pending assurances that embargoed articles would be allowed to pass through a neutral country to Great Britain's allies. Goods were seized on the grounds that consignees had been known or suspected to trade with the enemy, that the countries of destination had not prohibited their export; and in other cases notwithstanding export embargoes. Detained vessels moreover were required to pay pilotage, harbor, unlading, storage and other charges in advance of judicial determination of the validity of the seizures.

While these special vexations arose in isolated cases, American shippers generally became restive under the delays incident to the enforcement of the order-in-council and urged the State Department to further protest. On May 20 the British Foreign Office issued a memorandum explanatory of the efforts being made to expedite settlement for detained cargoes. During the preceding week approximately 20 cargoes had been taken up by the prize court, and of these 12 cases had been disposed of, the British Government arranging in nearly every instance to buy the cargo and reimburse the shippers fully for the seizure. Three American ships were then held in British ports and the total number of neutral vessels carrying American cargoes under detention was 36. Twenty-three of these, including two of the American vessels, carried cargoes of cotton subject to the special arrangement announced on March 8 and accepted by the principal representatives of the American cotton interests; a considerable portion of the cotton had already been sold and arrangements were under way for turning over the proceeds to the interested parties. Submission of other American cargoes to the prize court had been resorted to in case of contraband character or suspected enemy destination, and the British Government was unable to forego the right to submit such cases to the public investigation of a judicial tribunal. It admitted that some cases had been pending in the prize court for some time, notably those of certain vessels carrying large shipments of meat and lard ostensibly consigned to Scandinavian ports. In these instances much of the delay had been incident to negotiations carried on for many weeks between the Foreign Office and a representative of the American packers for an arrangement designed to limit importation into neutral countries adjacent to Germany to the quantities actually required for *bona fide* home consumption. The packers had demanded as a condition precedent to such an arrangement that the British Government buy the detained cargoes but had insisted upon such exorbitant terms that the negotiations had come to a standstill and the prize-court proceedings were about to be resumed. Annexed to the memorandum was an

abstract of American foreign trade statistics to show the vast increase in exports to Italy, Holland and the Scandinavian countries. The British Government considered that such abnormal expansion of imports alone justified the assumption of ultimate destination to Germany, but the memorandum pointed out that cargoes had been seized by the British authorities only when they believed themselves to be in possession of conclusive evidence of enemy destination.

Meanwhile the crisis in the relations between the United States and Germany had intervened to postpone indefinitely any further formal protest to Great Britain. In the public view the controversy over interferences with trade was almost totally eclipsed by the sinking of the *Lusitania* and the subsequent correspondence with Germany, and the Department of State resolutely declined to allow the defense of the rights of American commerce against British encroachment to become entangled in any way with the demands for redress for the slaughter of American citizens by German submarines. Individual complaints of American shippers, however, the Department of State continued to press promptly and vigorously through Ambassador Page at London, and of these persistent representations the British Government took cognizance in a formal memorandum dated June 17 and published simultaneously in England and America on the 25th. The purpose of this communication, which was expressly stated not to be an answer to the principles set forth in the American note of March 30, was to explain by reference to concrete cases the manner in which the British Government had consistently endeavored to give practical effect to its assurances of a desire to minimize the inevitable inconveniences to neutral countries arising from maritime warfare and particularly from the measures taken to restrict Germany's oversea commerce. After covering much the same ground as the Foreign Office statement, the memorandum dealt at length with the concessions to American citizens in regard to the export of goods of German origin. The order-in-council of March 11 provided for the investigation in the prize court of all neutral claims respecting such goods paid for before March 1. Towards the end of March, at the desire of the United States Government, an arrangement was made whereby American importers were enabled to submit proofs of payment to the British Embassy at Washington, which, if found satisfactory, freed the importer of the necessity of submitting his claim to the prize court and secured the goods against interference in transit *via* neutral ports. A few days later the British Government "agreed to recognize the neutral ownership of goods of enemy origin, even if not paid for before March 1, provided they were the subject of an f. o. b. contract of earlier date and had arrived at a neutral port before March 15." Special treatment also had been accorded to particular products stated to be indispensable to American industries, and in April and May undertakings had been given not to interfere with certain cargoes of dyestuffs, potash and German beet seed.[1] When it appeared after several weeks that enemy goods continued to pass out through neutral countries in undiminished volume, the British Government felt it necessary to fix a definite date after which such shipments must cease to enjoy the special immunity from liability to being placed in the prize court. June 1 was first fixed as the limiting date, but another special favor was granted and the time extended in exceptional cases to June 15. In granting American importers three months in which to clear off their purchases in enemy territory, the British Government submitted, great consideration had been shown to American interests. Nevertheless, a

[1] Early in April, for example, the British Government consented to allow two shiploads of German dyestuffs, paid for by the delivery of cotton before March 1, to pass without interference to the United States, provided the shipments were made in neutral vessels from Rotterdam and consigned to Secretary Redfield for distribution to the five associations of cotton, wool and silk manufacturers composing the Textile Alliance. Germany, however, refused to release the shipments.

fresh appeal had been made for a further extension of time, on the ground that the order-in-council of March 11 contained no mention of a time limit and the required proofs of ownership were of an exacting nature. The memorandum pointed out that the time limit had been fixed only for the special immunity granted as a friendly concession to American interests, and declared that experience had shown the necessity of the proofs required. In deference to the renewed representations of the United States Government, however, the British Government had extended immunity to shipments for which claims had been submitted and passed before June 15, and was prepared also to give special consideration to cases involving particular hardships if the goods concerned, paid for before March 1, were required for neutral governments or municipalities or in respect of works of public utility. With these exceptions, the British Government regretted that "they cannot continue to deal through the diplomatic channel with individual cases," but again pointed out the special provision made for the consideration of such cases in the prize court. In reply to complaints of delay in dealing with American cargoes in the prize court, the memorandum cited complaints of the president of the court and of the Solicitor-General against the postponements of cases requested by American claimants. The British Government, the memorandum concluded, earnestly desired to remove all causes of avoidable delay and was prepared to give most careful consideration to specific inquiries or representations in regard to particular cases, but it could "scarcely admit that on the basis of actual facts any substantial grievance on the part of American citizens is justified or can be sustained."

The British Defense.—These preliminary memoranda on the practice prepared the way for a formal defense of the principles of the British blockade in reply to the American note of March 30. Sir Edward Grey's note of July 23 was a long and adroit argument of the thesis that the measures of retaliation taken "on account of the menace to peaceful commerce resulting from the German submarine policy" were "not only reasonable and necessary in themselves, but constitute no more than an adaptation of the old principles of blockade to the peculiar circumstances" confronting Great Britain. The right of blockade, he submitted, had "obviously no value save in so far as it gives power to a belligerent to cut off seaborne exports and imports of his enemy." The United States coupled with an admission of the right of blockade the contention that a belligerent's measures of blockade should be so restricted as not to interfere with avenues of commerce through neutral territory open to an opponent so circumstanced as to be able to carry on commerce through adjacent neutral ports as easily as through his own.

> This is a contention which His Majesty's Government feel unable to accept and which seems to them unsustainable either in point of law or upon principles of international equity. They are unable to admit that a belligerent violates any fundamental principle of international law by applying a blockade in such a way as to cut off the enemy's commerce with foreign countries through neutral ports if the circumstances render such an application of the principles of blockade the only means of making it effective.

Since the United States had recognized the changes in the conditions of naval warfare which made the old form of "close" blockade impracticable, the only question which could arise as to the means of carrying out a blockade upon these extended lines was whether they conformed "to the spirit and principles of the essence of the rules of war," and this test the British Government was content to apply to its action in so far as it had necessitated interference with neutral commerce.

Sir Edward Grey described the difficulties of the Allies arising from the geographical situation of Germany as somewhat akin to those encountered by the United States during the American Civil War in the vitally important operation of cutting off the trade of the Confederate States. Having declared a blockade of some 3,000 miles of coast line with a naval

force at first very small, the United States met the difficulty of preventing access to the Confederate States through neighboring neutral territory by a development of the old principles of contraband and blockade, and applied and enforced the doctrine of continuous voyage to intercept goods destined for enemy territory before they reached the intermediate neutral ports.

As a counterpoise to the freedom with which one belligerent may send his commerce across a neutral country without compromising its neutrality, the other belligerent may fairly claim to intercept such commerce before it has reached, or after it has left, the neutral state, provided, of course, that he can establish that the commerce with which he interferes is the commerce of his enemy and not commerce which is *bona fide* destined for or proceeding from the neutral state. It seems, accordingly, that if it be recognized that a blockade is in certain cases the appropriate method of intercepting the trade of an enemy country, and if the blockade can only become effective by extending it to enemy commerce passing through neutral ports, such an extension is defensible and in accordance with principles which have met with general acceptance.

The really important principle, the note continued, was that adaptation of old rules should not be made unless consistent with the general principles upon which an admitted belligerent right is based; it was essential also that all unnecessary injury to neutrals should be avoided. With these conditions, Sir Edward Grey held, the British measures for the blockade of Germany fully complied. The British Government interfered with no goods with which it would not be entitled to interfere by blockade if the geographical position and conditions of Germany were such that her commerce passed through her own ports; it was taking the utmost possible care not to interfere with *bona fide* commerce of neutral countries; and it had tempered the severity of the old rules of blockade upon neutrals by relinquishing the invariable right of condemnation of ships and goods on their way to or from the blockaded area. Nor could the blockade measures properly be described, as in the American note of March 30, as embracing many neutral ports and coasts and, in effect, barring access to them. If the British Government was successful in its efforts to distinguish between the commerce of neutral and enemy countries, there would be "no substantial interference with the trade of neutral ports except in so far as they constitute ports of access to and exit from the enemy territory."

Taking up the passage of the American note affirming the undiminished sovereignty of neutral nations in time of war except as limited by the "clearly determined rights" of capture and condemnation for unneutral service, for the carriage of contraband, and for breach of blockade, Sir Edward Grey pointed out that the practice of nations on each of these subjects had not at any time been uniform or clearly determined, nor had the practice of any maritime nation always been consistent.

There are various particulars in which the exact method of carrying a blockade into effect has from time to time varied. The need of a public notification, the requisite standard of effectiveness, the locality of the blockading squadrons, the right of the individual ship to a preliminary warning that the blockade is in force, and the penalty to be inflicted on a captured blockade runner, are all subjects on which different views have prevailed in different countries and in which the practice of particular countries has been altered from time to time. The one principle which is fundamental and has obtained universal recognition, is that by means of blockade a belligerent is entitled to cut off, by effective means, the sea-borne commerce of his enemy.

The citation of the Declaration of Paris in the American note Sir Edward Grey assumed to have been inspired by the language of the memorandum of March 1, wherein it was stated that the Allies would hold themselves free to detain and take into port ships carrying goods of presumed enemy destination, ownership or origin, and by the announcement that vessels might be required to discharge goods of enemy ownership as well as those of enemy origin or destination. Without pausing to examine the bearing of the Declaration of Paris upon the questions at issue between Great Britain and the United States, Sir Edward Grey declared that the British Government was not in actual practice detaining goods on

the sole ground that they were the property of an enemy. The purpose of the blockade measures was to intercept commerce to and from the enemy country. In many cases proof of enemy ownership of goods afforded strong evidence of enemy origin or destination, and it was only in such cases that such goods were detained. Finally, Sir Edward Grey expressed the gratification of the British Government to observe that the blockade measures had had no detrimental effect on the commerce of the United States, figures of recent months having shown that the increased opportunities afforded by the war for American commerce had more than compensated for the loss of German and Austrian markets.

British Prize Law and the American Caveat.—Meanwhile, to conserve the rights of American citizens in proceedings in the British courts of prize, the United States Government had served upon Great Britain a formal caveat against the substitution of British municipal enactments for international law. The instructions to Ambassador Page, dated July 14, were in the following terms:

> In view of differences which are understood to exist between the two Governments as to the principles of law applicable in prize-court proceedings in cases involving American interests, and in order to avoid any misunderstanding as to the attitude of the United States in regard to such proceedings, you are instructed to inform the British Government that, in so far as the interests of American citizens are concerned, the Government of the United States will insist upon their rights under the principles and rules of international law, as hitherto established, governing neutral trade in time of war, without limitation or impairment by orders-in-council or other municipal legislation by the British Government, and will not recognize the validity of prize-court proceedings taken under restraints imposed by British municipal law in derogation of the rights of American citizens under international law.

Sir Edward Grey replied to the American caveat in a note of July 31, supplementary to the note of the 23d, with which it was published on Aug. 3. The reference to a divergence of views between the two Governments he was unable to understand, since he was aware of no difference existing between the two countries as to the principles of law applicable in prize-court cases. British prize courts, "according to the ancient form of commission under which they sit, are to determine cases which come before them according to the course of admiralty and the law of nations and the statutes, rules, and regulations for the time being in force in that behalf." As to the principles applied in American prize courts, Sir Edward Grey cited the holding in the case of the *Amy Warwick* "that prize courts are subject to the instructions of their own sovereign"; in the absence of such instructions, their jurisdiction and rules of decision are to be ascertained by reference to the principles of public law and the practice of nations. It appeared, therefore, that identical principles are applied in the prize courts of the two countries.

In illustration of the attitude of British prize-court judges towards the two sources of prize law, municipal legislation and the principles of international law, Sir Edward Grey quoted Lord Stowell to the effect that the "two propositions—that the court is bound to administer the law of nations, and that it is bound to enforce the King's orders-in-council—are not at all inconsistent with each other, because these orders and instructions are presumed to conform themselves, under the given circumstances, to the principles of its unwritten law," the "law evidenced in the course of its decisions and collected from the common usage of civilized states." The classical passage in which this quotation occurs, Sir Edward Grey continued, had recently been quoted and adopted by Sir Samuel Evans, the president of the prize court, with the following comment:

> I make bold to express the hope and belief that the nations of the world need not be apprehensive that orders-in-council will emanate from the Government of this country in such violation of the acknowledged laws of nations that it is conceivable that our prize tribunals, holding the law of nations in reverence, would be called upon to disregard and refuse obedience to the provisions of such orders.

Turning to the immediate question of the measures of blockade, which he had endeavored in his note of July

23 to convince the United States Government were consistent with the principles of international law, Sir Edward Grey said:

> The legality of these measures has not yet formed the subject of a decision of the prize court; but I wish to take this opportunity of reminding your Excellency that it is open to any United States citizens whose claim is before the prize court to contend that any order-in-council which may affect his claim is inconsistent with the principles of international law, and is, therefore, not binding upon the court. If the prize court declines to accept his contentions, and if, after such a decision has been upheld on appeal by the Judicial Committee of His Majesty's Privy Council, the Government of the United States of America consider that there is serious ground for holding that the decision is incorrect and infringes the rights of their citizens, it is open to them to claim that it should be subjected to review by an international tribunal.

This principle that the decisions of the national prize courts may properly be subjected to international review, Sir Edward Grey pointed out, was conceded by Great Britain in the Jay Treaty of 1793 and affirmed by the Supreme Court of the United States in the Matamoros cases under the Treaty of Washington of 1871.

Cotton Declared Contraband.—The reply of the American Government to the accumulation of British notes was delayed until the end of October by the more immediate demands of the crisis with Germany. In the interim three important events affecting the controversy with Great Britain supervened, the first of which abolished the special indulgence hitherto granted to cotton. The treatment of American cotton shipments to the Netherlands and Scandinavia was now of paramount interest on both sides of the Atlantic. From the declaration of the blockade on March 11 to July 19, 60 vessels with cargoes wholly or partly of cotton were diverted to British ports, and in accordance with the special agreement with American shippers, the British Government purchased 25 of the cargoes outright, making total payments to the latter date of $3,500,000 (Lord Robert Cecil in the House of Commons, July 19). At this point, however, the British Government announced (July 20) a new rule excluding from purchase under the terms of the agreement cotton shipped thereunder the ownership of which passed from the American exporter to an enemy of Great Britain. This ruling materially altered the standing before the prize court of numerous cases in which European consignees had intervened with claims of interest in the cargoes, and the American Government promptly declared its readiness to protest the condemnation without compensation of any American shipment of non-contraband to neutral countries.

The new rule was significant of the great and accumulating difficulties of the British Government arising from the attempt to reconcile with the objects of the blockade of Germany the privileged status of cotton in the list of non-contraband. In adopting the policy of special consideration in deference to the interests of the United States and other neutrals, the British Government voluntarily accepted a severe handicap in dealing with a material essential to the manufacture of propulsive explosives. On this ground the policy was the object of bitter popular criticism, which rose in July to an insistent demand in the press and in Parliament for the transfer of cotton to the list of contraband. The Government sought to attain the same practical end through agreements with the northern European neutrals for the prohibition of reëxportation or the limitation of imports to actual needs. While these efforts met with some success in Norway and Sweden, the measures taken were only partially effective, and on July 20 Mr. Asquith admitted in the House of Commons that the situation was very unsatisfactory. After another month's delay the British Government finally abandoned its efforts to meet the situation with compromise expedients and by an order-in-council of Aug. 20 added raw cotton, cotton linters, cotton waste and cotton yarns to the list of absolute contraband. In a statement of Aug. 24 the British Embassy assured American interests that the changed status of cotton would in no way restrict exports proved to be

exclusively destined for the normal consumption of neutral countries, while making it equally clear that cotton thenceforth was to be subject to the doctrine of continuous transport.

The Packers' Cases.—The rigorous application of the doctrine of continuous transport by the British prize court was exemplified within the following month by the first of the decisions in the so-called "packers' cases." When the trial of the first of these cases began in London on July 12, after the failure of prolonged negotiations for settlement out of court already described, the claims of the packers for detained cargoes of meat and meat products aggregated some $14,000,000, involving five neutral ships seized late in 1914, and 31 other vessels detained under the order-in-council of March 11. The first case brought to trial involved the cargoes of the Norwegian steamers *Alfred Nobel, Kim* and *Bjornstjerne Bjornson,* and the Swedish steamer *Fridland,* all of them detained in the last two months of 1914. On March 22 the British prize court ordered payment in the sum of $600,000 for certain consignments of American flour and other foodstuffs. Packers' products valued at some $2,500,000 made up the bulk of the remainder of the cargoes, and of these the greater part was condemned in a decision handed down on Sept. 16. The main contention of the Crown was that the goods were contraband or conditional contraband to be sent to enemies of Great Britain by way of Copenhagen. Sir Samuel Evans, who delivered the opinion, held that the doctrine of continuous transport had become a part of the law of nations at the commencement of the war, and that, therefore, the court was entitled to take a more extended outlook in order to discover the ultimate destination of the goods. When captured the ships were carrying to Copenhagen more than 13 times the amount of goods which in normal circumstances would have been taken to that port; moreover, the cargoes contained hundreds of thousands of tins of canned meat, a product imported by Denmark before the war only in small quantities. From the facts proved and the reasonable and, indeed, irresistible inference from them, the conclusion was clear that the cargoes were not on their way to Denmark to be incorporated in the common stock of that country by consumption or *bona fide* sale or otherwise, but, on the contrary, that they were on their way not only to German territory but also to the German Government and its forces for naval and military use as their real ultimate destination. To hold the contrary would be to allow one's eyes to be filled by the dust of theories and technicalities and to be blinded to the realities of the case.

The British Government supplemented the court's opinion with a special memorandum on the cases, delivered to the State Department on Oct. 12, which reviewed the circumstances and evidence in detail to demonstrate that the decision was based on nothing but long recognized and elementary principles of international law. Denying that the cargoes were seized under orders-in-council of disputed validity, the memorandum declared that "the ground for the seizure was that they were conditional contraband destined from the first . . . for the use of the armies, navies, and government departments of Germany and Austria, and only sent to neutral ports with the object of concealing their true destination." This ground for seizure had been asserted by none more strongly than American courts and international jurists for over 50 years. The liability to seizure and condemnation of foodstuffs shown to have a "highly probable" destination for naval or military use had long been a universally admitted principle of international law, and it was the American courts which first insisted on the further principle that if this destination was shown, it made no difference that the goods were found upon a ship sailing to a neutral port. In this doctrine of continuous voyage Great Britain had acquiesced at the time of the Civil War, and the British Government held that

the circumstances of modern warfare, the development of international trade and the increase in the rapidity of and

the facilities for transport both by land and sea have made the doctrine the more reasonable and, indeed, essential, if a belligerent is to be allowed to exercise at all his undoubted right of interrupting the supply of foodstuffs to his enemy's military and naval forces.

Concessions to American Importers.—While the restraints of the British policy bore most heavily upon export commerce, the enforcement of the blockade imposed severe hardships upon American importers, especially those dealing wholly or principally in German and Austrian goods. They were relieved in large measure by the special relaxation of the blockade, described in an earlier paragraph, for the release of American-owned goods of German origin paid for before March 1 and properly certificated to the British Embassy before June 15. This concession, however, was of no benefit to a considerable class of importers who had entered, prior to the declaration of the blockade, into large contracts with German and Austrian manufacturers for future delivery of goods on a credit basis. In the early summer these goods began to accumulate at Rotterdam, and the importers, under pressure from the manufacturers for payment and from their customers for promised deliveries, petitioned the State Department for relief.

The British Government meanwhile had withdrawn (June 15) the privilege of presenting individual cases through diplomatic channels, and had shown a disposition strictly to enforce the blockade against German exports which effectually discouraged shipping companies from accepting cargoes of German origin without special guaranty of immunity from seizure. Late in June the American steamer *Neches*, sailing from Rotterdam for the United States with a general cargo, after being detained at the Downs, was brought to London and required to discharge cargo, on the ground that the goods, originating in part at least in Belgium, fell within the provisions of paragraph 4 of the blockade order-in-council. Against this action the United States Government entered an immediate but unavailing protest.

Such representations as the foreign trade advisers of the State Department urged upon the British Embassy during the summer in behalf of American importers generally were wholly barren of result. Certain enterprising importers, however, submitted their cases direct to the British Foreign Office through London attorneys and thereby secured release of goods contracted but not paid for before March 1. These cases came to the attention of the State Department late in August and were promptly made the basis of a request for the reopening on equal terms to all American importers of channels for the submission of applications for permits covering such goods. After consultation with Paris the British Government granted this further concession without demur early in September, and on Sept. 24 the British Embassy notified the State Department of its readiness to receive through the foreign trade advisers

applications for permits for the shipment of goods of German and Austrian origin from neutral ports in cases where proofs are furnished that such goods were either (1) ordered and paid for by American importers prior to March 1, 1915, or (2) ordered by or for the account of American importers prior to March 1, 1915, under contracts by the terms of which the importers are obliged to take delivery of the goods on or before shipment and are bound to pay for them.

The British Government declined to receive applications for permits for the release of German goods contracted or paid for between March 1 and 15, or to extend the period for the filing of applications beyond the announced date of Nov. 1. It admitted, however, certain claims under "implied contracts" and thus opened the way for the fullest relief of the importers reasonably possible. At the height of the agitation for protest to Great Britain, the value of the goods held at Rotterdam was estimated as high as $167,000,000. In the event the claims entered aggregated scarcely five per cent. of that amount, the 500 odd claims filed with the foreign trade advisers up to Oct. 29 totalling in the neighborhood of $7,500,000.

A Blockade "Ineffective, Illegal, and Indefensible."—During the five months of strained relations with Germany following the sinking of the

Lusitania, neither the thinly veiled suggestions of Berlin nor the open complaints of partiality made by German sympathizers at home moved the United States Government to resume the intermitted commercial controversy with Great Britain. Not only did the Administration hold the defense of rights of trade of less immediate moment than the protection of American lives, but it declined to consider a renewal of protest to Great Britain as a palliative to the demands upon Germany for redress for the slaughter of American citizens. Hence formal discussion of the legitimacy of the British blockade and its restraints upon American commerce remained in abeyance until the German Government early in October yielded satisfactory assurances of observance of American rights on the high seas and abandoned the main principle of ruthlessness on which its submarine campaign was based.

Having disposed of the main issue with Germany, Mr. Lansing turned to the arrears of the correspondence with Great Britain, and on Oct. 21 addressed to the British Government a long and carefully argued reply to the notes of Jan. 7 and subsequent dates. Upon the assurances conveyed by the earlier of these communications, the American Government had entertained a hope that the measures taken by the Allied Governments would not unjustifiably infringe upon the neutral commercial rights of American citizens. Not only had this hope not been realized, but interferences with American ships and cargoes destined in good faith to neutral ports had become increasingly vexatious, arousing a "reasonable apprehension" that, if not resisted, the restrictive measures might be carried to an extent even more injurious to American interests. With this premise Mr. Lansing proceeded to set forth the complaints of this Government at length, disposing of the statistics submitted by Sir Edward Grey to demonstrate an increase in the volume of American export trade since the war began with the brief comment that the comparative values failed to take into account the increased price of commodities resulting from a state of war or to make allowance for the closing of the markets previously open to neutral European nations.

Dealing first with the detentions of American vessels and cargoes under the orders-in-council of Aug. 20 and Oct. 29, 1914, and March 11, 1915, Mr. Lansing pointed out that "in practice these detentions have not been uniformly based on proofs obtained at the time of seizure, but many vessels have been detained while search was made for evidence of the contraband character of cargoes or of an intention to evade the non-intercourse measures of Great Britain." For the practice of taking vessels into port to facilitate search for such evidence he found no justification either in the standard texts on international law or in the instructions issued to naval commanders by the leading maritime powers from 1888 to the beginning of the present war. The British Government was misled also in asserting an inconsistency in the present position of the American Government in relation to search at sea and its policy and practice during the Civil War; whatever may have been the irregularities at the beginning of that war, there were no instances when vessels were brought into port for search prior to instituting prize-court proceedings, nor were captures made on grounds other than "evidence found on the ship under investigation and not upon circumstances ascertained from external sources." Further Mr. Lansing denied the validity of the British contention of justification for search in port on the ground of changed commercial and maritime conditions; commercial transactions under present conditions, hampered as they are by belligerent censorship of postal and telegraph communication, he held to be essentially no more complex and disguised than in other recent wars, and he quoted the report of a board of naval experts in refutation of the claim based upon the greater size and seaworthiness of merchant vessels.

Turning to the character and sufficiency of the evidence warranting detention of a suspected vessel or cargo for prize proceedings, Mr. Lansing

submitted that the British order-in-council of Aug. 5, 1914, had altered the established practice binding courts of prize to consider at the first hearing only the ship's papers, the goods found on board, and the statements of officers and seamen taken separately under oath, and to admit additional evidence only as "further proof" after the cause had been fully heard upon the facts already in evidence or when this evidence furnished ground for prosecuting the inquiry further.

Under these new rules there is no longer a "first hearing" on the evidence derived from the ship, and the prize court is no longer precluded from receiving extrinsic evidence for which a suggestion has not been laid in the preparatory evidence. The result is, as pointed out above, that innocent vessels or cargoes are now seized and detained on mere suspicion while efforts are made to obtain evidence from extraneous sources to justify the detention and the commencement of prize proceedings. The effect of this new procedure is to subject traders to risk of loss, delay, and expense so great and so burdensome as practically to destroy much of the export trade of the United States to neutral countries of Europe. . . .

The further contention that the greatly increased imports of neutral countries, adjoining Great Britain's enemies, raise a presumption that certain commodities, such as cotton, rubber, and others more or less useful for military purposes, though destined for those countries, are intended for reëxportation to the belligerents who can not import them directly, and that this fact justifies the detention for the purpose of examination of all vessels bound for the ports of those neutral countries, notwithstanding the fact that most of the articles of trade have been placed on the embargo lists of those countries, can not be accepted as laying down a just or legal rule of evidence. Such a presumption is too remote from the facts and offers too great opportunity for abuse by the belligerent, who could, if the rule were adopted, entirely ignore neutral rights on the high seas and prey with impunity upon neutral commerce. To such a rule of legal presumption this Government can not accede, as it is opposed to those fundamental principles of justice which are the foundation of the jurisprudence of the United States and Great Britain.

Recalling Sir Edward Grey's admission of increased British exports to Scandinavia and the Netherlands, in a note of Aug. 13 comparing the course of British and American trade under the blockade, Mr. Lansing made the point that "Great Britain concededly shares in creating a condition which is relied upon to justify the interpretation of American goods to neutral European ports." Should British exports further increase, it was obvious that under this disputed rule of evidence "the presumption of enemy destination could be applied to a greater number of American cargoes, and American trade would suffer to the extent that British trade benefited by the increase."

When goods are clearly intended to become incorporated in the mass of merchandise for sale in a neutral country, it is an unwarranted and inquisitorial proceeding to detain shipments for examination as to whether those goods are ultimately destined for the enemy's country or use. Whatever may be the conjectural conclusions to be drawn from trade statistics, which, when stated by value, are of uncertain evidence as to quantity, the United States maintains the right to sell goods into the general stock of a neutral country, and denounces as illegal and unjustifiable any attempt of a belligerent to interfere with that right on the ground that it suspects that the previous supply of such goods in the neutral country, which the imports renew or replace, has been sold to an enemy. That is a matter with which the neutral vendor has no concern and which can in no way affect his rights of trade. Moreover, even if goods listed as conditional contraband are destined to an enemy country through a neutral country, that fact is not in itself sufficient to justify their seizure.

Hence, no other course was open to the United States

but to contest seizures of vessels at sea upon conjectural suspicion and the practice of bringing them into port for the purpose, by search or otherwise, of obtaining evidence for the purpose of justifying prize proceedings, of the carriage of contraband, or of breaches of the order-in-council of March 11.

On the blockade measures imposed by this order Mr. Lansing formulated the second complaint of the American Government. In establishing a blockade so extensive as to prohibit trade with the Teutonic Empires even through the ports of adjacent neutral countries, Great Britain had conceded and assured the right of unimpeded trade with those countries. But after six months' application of the blockade order, the American Government was convinced that Great Britain had not succeeded in her efforts to dis-

tinguish between enemy and neutral trade. By the intricate arrangements for the creation in neutral countries of special consignment agencies of broad powers, American commercial interests were hampered and American trade seriously impaired, and the practice was made even more harassing by the fact that the British authorities required consignors to prove that their goods were not bound to an enemy even when included in the embargo lists of the neutral country of destination. While the United States Government was at first inclined to view the blockade measures with leniency because of the British assurances of regard and provision for the rights of neutral trade, it was now forced to realize that its expectations, as set forth in the note of March 30, were based on a misconception of the intentions of the British Government, and it could no longer permit the validity of the alleged blockade under international law to remain unchallenged.

Applying to the British blockade the established criteria of legality, Mr. Lansing found that it violated all the basic principles laid down in international law. A blockade "in order to be binding must be effective," but it was "common knowledge that the German coasts are open to trade with the Scandinavian countries and that German naval vessels cruise both in the North Sea and the Baltic and seize and bring into German ports neutral vessels bound for Scandinavian and Danish ports." A blockade must apply impartially to the ships of all nations, but not only were German Baltic ports open to traffic with the Scandinavian countries, but it was "a matter of common knowledge that Great Britain exports and reexports large quantities of merchandise to Norway, Sweden, Denmark and Holland, whose ports, so far as American commerce is concerned, she regards as blockaded." Finally, "there is no better settled principle of the law of nations than that which forbids the blockade of neutral ports in time of war."

Without mentioning the other customary elements of a regularly imposed blockade, such as notification of the particular coast line invested, the imposition of the penalty of confiscation, etc., which are lacking in the present British "blockade" policy, it need only be pointed out that, measured by the three universally conceded tests above set forth, the present British measures can not be regarded as constituting a blockade in law, in practice, or in effect. It is incumbent upon the United States Government, therefore, to give the British Government notice that the blockade, which they claim to have instituted under the order-in-council of March 11, can not be recognized as a legal blockade by the United States.

Third and lastly the United States Government took exception to the position of Great Britain that American interests adversely affected by the British policies of contraband and non-intercourse should seek redress in the British prize courts, and that, pending the exhaustion of such legal remedies with the result of denial of justice, the British Government could not "continue to deal through the diplomatic channels with individual cases." Mr. Lansing held "that the proposed course embodies the form rather than the substance of redress."

The cases which the British Government would have claimants present to their prize courts are essentially different from cases arising wholly within the jurisdiction of a foreign country. They result from acts committed by the British naval authorities upon the high seas, where the jurisdiction over neutral vessels is acquired solely by international law. Vessels of foreign nationality, flying a neutral flag and finding their protection in the country of that flag, are seized without facts warranting a reasonable suspicion that they are destined to blockaded ports of the enemy or that their cargoes are contraband, although the possession of such facts is, by international law, essential to render a seizure legal.

The orders-in-council and other regulations of the British Government under which these seizures are made, although in many of the present cases complained of by claimants as contrary to international law and in dispute between the Governments of the United States and Great Britain, are by the admission of the British note of July 31 binding upon the very courts which are to dispense justice to dissatisfied claimants. Thus bound, Mr. Lansing held, "those courts are powerless to pass upon the real grounds of complaint or to give redress for wrongs of this nature," and to the suggestion that claimants were

free to ask the prize court to rule upon a claim of conflict between an order-in-council and a rule of international law he returned the query: "How can a tribunal fettered in its jurisdiction and procedure by municipal enactments declare itself emancipated from their restrictions and at liberty to apply the rules of international law with freedom?"

As a final ground why American citizens could not submit their wrongs arising out of undue detentions and seizures to British prize courts for reparation, Mr. Lansing advanced the manner in which the courts obtained jurisdiction of such cases. It is a principle of international law fundamental to the freedom of the seas, he continued, that the jurisdiction over merchant vessels on the high seas is that of the nation whose flag it rightfully flies.

> Municipal enactments of a belligerent power can not confer jurisdiction over or establish rules of evidence governing the legality of seizures of vessels of neutral nationality on the high seas. International law alone controls the exercise of the belligerent right to seize and detain such vessels. Municipal laws and regulations in violation of the international rights of another nation, can not be extended to the vessels of the latter on the high seas so as to justify a belligerent nation bringing them into its ports, and, having illegally brought them within its territorial jurisdiction, compelling them to submit to the domestic laws and regulations of that nation. Jurisdiction obtained in such a manner is contrary to those principles of justice and equity which all nations should respect.

Hence, the United States Government, viewing with surprise and concern the attempt of the British Government to confer upon the British prize courts jurisdiction by this illegal exercise of force, could not reasonably be expected in these circumstances "to advise its citizens to seek redress before tribunals which are, in its opinion, unauthorized by the unrestricted application of international law to grant reparation, nor to refrain from presenting their claims directly to the British Government through diplomatic channels."

Reserving to the United States Government the right to make the propriety and right of the inclusion of certain articles in the British list of contraband the subject of a later communication, Mr. Lansing concluded as follows:

> I believe it has been conclusively shown that the methods sought to be employed by Great Britain to obtain and use evidence of enemy destination of cargoes bound for neutral ports and to impose a contraband character upon such cargoes are without justification; that the blockade, upon which such methods are partly founded, is ineffective, illegal, and indefensible; that the judicial procedure offered as a means of reparation for an international injury is inherently defective for the purpose; and that in many cases jurisdiction is asserted in violation of the law of nations. The United States, therefore, cannot submit to the curtailment of its neutral rights by these measures, which are admittedly retaliatory, and therefore illegal, in conception and in nature, and intended to punish the enemies of Great Britain for alleged illegalities on their part. The United States might not be in a position to object to them if its interests and the interests of all neutrals were unaffected by them, but, being affected, it can not with complacence suffer further subordination of its rights and interests to the plea that the exceptional geographic position of the enemies of Great Britain require or justify oppressive and illegal practices.
>
> The Government of the United States desires, therefore, to impress most earnestly upon His Majesty's Government that it must insist that the relations between it and His Majesty's Government be governed, not by a policy of expediency, but by those established rules of international conduct upon which Great Britain in the past has held the United States to account when the latter nation was a belligerent engaged in a struggle for national existence. It is of the highest importance to neutrals not only of the present day but of the future that the principles of international right be maintained unimpaired.
>
> This task of championing the integrity of neutral rights, which have received the sanction of the civilized world against the lawless conduct of belligerents arising out of the bitterness of the great conflict which is now wasting the countries of Europe, the United States unhesitatingly assumes, and to the accomplishment of that task it will devote its energies, exercising always that impartiality which from the outbreak of the war it has sought to exercise in its relations with the warring nations.

With the American note of Oct. 21 the formal controversy with Great Britain rested for the remainder of the year, the only addition to the discussion being a British memorandum of Dec. 13 on the course of American trade.

GERMAN METHODS OF NAVAL WARFARE

The German War Zone.—A new and critical chapter in American diplomatic history opened with the German proclamation of Feb. 4. By that decree (see *supra*) the German Government declared the waters around the British Isles a war zone from and after Feb. 18; announced the destruction of every enemy vessel found therein without regard to the safety of crew and passengers; and warned neutral vessels of the danger of hostile attack intended for enemy shipping. In an explanatory memorandum (see *supra*), issued simultaneously, Germany charged Great Britain with various infractions of international law designed to destroy by starvation the entire German people; alleged the acquiescence of neutral powers in the British policy; and requested of them equal consideration for the vital interests of Germany and aid in keeping their ships and nationals from the war zone. With the exception of the element blinded by German sympathies, which echoed the jubilation and assurance of Berlin over the discovery of an effective weapon against England, American opinion estimated with complete accuracy the significance of the German decree and the submarine campaign which it entailed. It pronounced submarine warfare against British shipping futile as a military enterprise, incapable of blockading or, as the event proved, even seriously affecting British maritime commerce. On the other hand, it discerned in the amazing threat against neutral rights the subserviency of German diplomacy to military control already exhibited in the violation of Belgian neutrality, and recognized the legal and the humane as the serious aspects of the German policy. American opinion erred, indeed, in doubting, before the submarine campaign began, that a civilized power could cast off the restraints of civilized naval warfare and adopt for the sake of an insignificant military advantage the ruthless inhumanity of the German practice. Yet to this policy Germany had in fact deliberately committed herself, and to the end that it might suffer no check, she endeavored to disclaim responsibility for the inevitable outrages on neutral rights.

"Strict Accountability."—This disclaimer the United States promptly and explicitly rejected in advance. In a note of Feb. 10 the United States Government pointed out to Germany the "very serious possibilities of the course of action apparently contemplated" under the war-zone proclamation, and requested the German Government to consider before acting on that policy "the critical situation in respect of the relation between this country and Germany which might arise were the German naval forces . . . to destroy any merchant vessel of the United States or cause the death of American citizens."

> It is, of course, not necessary to remind the German Government that the sole right of a belligerent in dealing with neutral vessels on the high seas is limited to visit and search, unless a blockade is proclaimed and effectively maintained, which this Government does not understand to be proposed in this case. To declare or exercise a right to attack and destroy any vessel entering a prescribed area of the high seas without first certainly determining its belligerent nationality and the contraband character of its cargo would be an act so unprecedented in naval warfare that this Government is reluctant to believe that the Imperial Government of Germany in this case contemplates it as possible. The suspicion that enemy ships are using neutral flags improperly can create no just presumption that all ships traversing a prescribed area are subject to the same suspicion. It is to determine exactly such questions that this Government understands the right of visit and search to have been recognized.

The note further reminded the German Government that the United States was open to none of the criticism for unneutral action preferred in the German memorandum, that this Government had acquiesced in no belligerent measures to restrain neutral trade, but had on the contrary protested against any untoward effects on American shipping not justified by accepted principles of international law. Hence this Government regarded itself as free "to take

with a clear conscience and upon accepted principles the position indicated in this note."

If the commanders of German vessels of war should act upon the presumption that the flag of the United States was not being used in good faith and should destroy on the high seas an American vessel or the lives of American citizens, it would be difficult for the Government of the United States to view the act in any other light than as an indefensible violation of neutral rights which it would be very hard indeed to reconcile with the friendly relations now happily subsisting between the two governments.

If such a deplorable situation should arise, the Imperial German Government can readily appreciate that the Government of the United States would be constrained to hold the Imperial German Government to a strict accountability for such acts of their naval authorities and to take any steps it might be necessary to take to safeguard American lives and property and to secure to American citizens the full enjoyment of their acknowledged rights on the high seas.

The Government of the United States, in view of these considerations, which it urges with the greatest respect and with the sincere purpose of making sure that no misunderstandings may arise, and no circumstances occur that might even cloud the intercourse of the two governments, expresses the confident hope and expectation that the Imperial German Government can and will give assurance that American citizens and their vessels will not be molested by the naval forces of Germany otherwise than by visit and search, though their vessels may be traversing the sea areas delimited in the proclamation of the German Admiralty.

Germany's Disclaimer of Responsibility.—With the assurance of the dominant authority, the German Admiralty assumed the extraordinary function of replying to the American note in advance of the Foreign Office, and on Feb. 16 issued as an official exposition of the German position a statement made by Admiral Behncke to the American naval attaché at Berlin. Admiral Behncke's communication differed only in brevity and bluntness from the formal note published in Berlin two days later, with the exception of this remarkable statement of the purpose and expectations with which Germany began her submarine campaign:

Since the shutting off of food supplies had now come to a point where Germany had no longer sufficient food to feed her people, it became necessary for her to bring England to terms by the exercise of force. Germany knows that by the use of the submarine England can be placed in a position where food will be lacking. She has the submarine force with which to do it; her life as a nation and the lives of her people depend upon putting this campaign into action, and she must do so.

The German note of Feb. 16 reached the State Department simultaneously with its publication in Berlin. It made an obvious effort to efface by extreme politeness the unfavorable impression created in neutral countries by the tactless and threatening language of the Admiralty memorandum of Feb. 4, but it none the less definitely joined issue with the United States on the question of responsibility for the perils to neutral shipping and neutral lives in the zone of submarine operations. Contrasting first Germany's scrupulous observance of "valid international rules regarding naval warfare" with the British policy of interference with neutral trade as challenged in the American note of Dec. 26 and later exemplified in the seizure of the *Wilhelmina* (see *supra*), the German Government declared that the procedure announced in the war-zone proclamation was

in no way directed against legitimate commerce and legitimate shipping of neutrals, but represents solely a measure of self-defense imposed on Germany by her vital interests, against England's method of warfare, which is contrary to international law, and which so far no protest by neutrals has succeeded in bringing back to the generally recognized principles of law as existing before the outbreak of war.

By the silent or protesting toleration of neutrals, Germany was as good as cut off from her overseas supply, not only of absolute contraband goods, but also of articles of conditional or non-contraband character. Great Britain, on the other hand, through the toleration of neutrals, was freely supplied with goods of all classes.

The German Government feels itself obliged to point out with the greatest emphasis that a traffic in arms, estimated at many hundreds of millions, is being carried on between American firms and Germany's enemies. Germany fully comprehends that the prac-

tice of right and the toleration of wrong on the part of neutrals are matters absolutely at the discretion of neutrals, and involve no formal violation of neutrality. Germany, therefore, did not complain of any formal violation of neutrality, but the German Government, in view of complete evidence before it, cannot help pointing out that it, together with the entire public opinion of Germany, feels itself to be severely prejudiced by the fact that neutrals, in safeguarding their rights in legitimate commerce with Germany according to international law, have up to the present achieved no, or only insignificant, results, while they are making unlimited use of their right by carrying on contraband traffic with Great Britain and our other enemies.

If it is a formal right of neutrals to take no steps to protect their legitimate trade with Germany, and even to allow themselves to be influenced in the direction of the conscious and willful restriction of their trade, on the other hand, they have the perfect right, which they unfortunately do not exercise, to cease contraband trade, especially in arms, with Germany's enemies.

Germany now found herself, the note continued, "obliged to answer Great Britain's murderous method of naval warfare with sharp countermeasures," involving the indiscriminate sowing of mines in the war zone and the destruction of enemy merchant vessels in every other way, which she trusted would have no smaller measure of toleration, even if they "present new terrors of naval warfare."

In view of the fact that Germany gave the first proof of her good-will in fixing a time limit of not less than fourteen days before the execution of said measures, so that neutral shipping might have an opportunity of making arrangements to avoid threatening danger, this can most surely be achieved by remaining away from the naval war zone. Neutral vessels which, despite this ample notice, which greatly affects the achievement of our aims in our war against Great Britain, enter these closed waters will themselves bear the responsibility for any unfortunate accidents that may occur. Germany disclaims all responsibility for such accidents and their consequences.

The German Government declared itself ready "to deliberate with the United States concerning any measures which might secure the safety of legitimate shipping of neutrals in the war zone," but insisted that all efforts in this direction might be rendered very difficult, first, by the misuse of neutral flags and armed resistance to submarines ordered by the British Admiralty, and second, by the contraband trade with Great Britain, which Germany was resolved to suppress by every means at her disposal. Concerning the former,

Germany, being in a state of necessity, wherein she was placed by violation of law, must render effective her measures in all circumstances, in order thereby to compel her adversary to adopt methods of warfare corresponding with international law, and so to restore the freedom of the seas, of which Germany at all times is the defender and for which she to-day is fighting.

Concerning the latter, "Germany would fain hope that the United States, after further consideration, will come to a conclusion corresponding to the spirit of real neutrality."

Finally, the note assured the United States that in view of the satisfactory results to be expected from the American protest against illegal use of the United States flag, German submarine commanders had been instructed to "refrain from violent action against American merchant vessels, so far as these can be recognized." Germany recommended, however, that American vessels carrying peaceful cargoes be convoyed through the war zone and suggested immediate negotiations to determine how the method of convoy could be carried out. Meanwhile, the United States was requested urgently to recommend its merchant vessels to avoid the war zone, at least until the settlement of the flag question. If the United States, the note concluded,

in view of the weight which it is justified in throwing an dable to throw into the scales of the fate of peoples, should succeed at the last moment in removing the grounds which make that procedure an obligatory duty for Germany, and if the American Government, in particular, should find a way to make the Declaration of London respected—on behalf, also, of those powers which are fighting on Germany's side—and thereby make possible for Germany legitimate importation of the necessaries of life and industrial raw material, then the German Government could not too highly appreciate such a service, rendered in the interests of humane methods of warfare, and would gladly draw conclusions from the new situation.

Germany's Impeachment of American Neutrality.—To promote the adjustment adumbrated in the German note, the United States Government at once exercised the widest privilege of friendly suggestion permitted by international usage. On Feb. 20 it addressed identic notes to Germany and Great Britain proposing a compromise basis of settlement, the one, in brief, to abandon her submarine campaign against British merchant shipping, the other to permit the free importation of foodstuffs for the consumption of the German civil population. The fate of the American proposals has already been described (see *supra*). Germany gave a very qualified acceptance; Great Britain declined to compromise with her enemy and proceeded to apply her overwhelming sea power to the blockade of all German overseas commerce.

From suggestion that the United States should redress the paralysis of German naval power by placing an embargo on the exportation of arms and munitions of war to the Allies, Germany now passed to open impeachment of American neutrality. On April 4 Count von Bernstorff transmitted an official memorandum setting forth "the opinion of the German Government and the opinion prevalent in the German nation." Reviewing the circumstances of the *Wilhelmina* case as a concrete example of British violation of the "recognized principles of international law," the note proceeded:

> The United States Government has not yet obtained the release of the ship, nor has it after eight months of war succeeded in safeguarding the legitimate American trade with Germany. Such a delay, especially when the supply of foodstuffs is concerned, seems equivalent to complete failure. It is therefore to be assumed that the United States Government has accepted England's violations of international law.

Turning to the question of the exportation of war material, the German Ambassador hoped "to agree with the Government of the United States in assuming that with regard to the question of neutrality there is not only the formal side to be considered but also the spirit in which neutrality is enforced." Considering the unprecedented conditions of the present war, the note held, it was not justified to plead that in former wars Germany had furnished belligerents with war material. Then Germany entered into competition with other nations; now the United States was the only country in a position to export any noteworthy quantity of war material.

> This fact ought to give a new meaning to the idea of neutrality, independent of the formal law. Instead of that, and in contradiction with the real spirit of neutrality, an enormous new industry of war materials of every kind is being built up in the United States, inasmuch as not only the existing plants are kept busy and enlarged, but also new ones are continually founded.
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> The international agreements for the protection of the right of neutrals originate in the necessity of protecting the existing industries of the neutral countries. They were never intended to encourage the creation of entirely new industries in neutral States, as, for instance, the new war industry in the United States which supplies only one party of the belligerents.
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> In reality the American industry is supplying only Germany's enemies, a fact which is in no way modified by the purely theoretical willingness to furnish Germany as well, if it were possible. If the American people desire to observe true neutrality, they will find means to stop the exclusive exportation of arms to one side, or at least to use this export trade as a means to uphold the legitimate trade with Germany, especially the trade in foodstuffs.

Quoting from an alleged statement of President Wilson on the raising of the embargo on arms for Mexico, to the effect that Huerta and Carranza should be treated on an equality if the United States was to observe the true spirit of neutrality as compared with mere paper neutrality (*cf. A. Y. B.*, 1914, p. 29), the note concluded: "This conception of the 'true spirit of neutrality,' if applied to the present case, would lead to an embargo on arms."

That no detail might be lacking to heighten the offensiveness of this extraordinary communication, Count von Bernstorff assumed the function of giving it to the press on April 10. Its effect was to exasperate the steadily mounting resentment against the outrages already committed by Germany upon American ships and American citizens (see *infra*). While

none of this appeared in the Government's reply, the American note of April 21 administered a rebuke which permanently closed the discussion with the German Government (see *Neutrality, infra*). While he had hoped that this Government's general policy of neutrality had been made abundantly clear, Mr. Bryan was "perfectly willing" to state it again, the more so as the language employed by the German Ambassador was "susceptible of being construed as impugning the good faith of the United States in the performance of its duties as a neutral." First, as all the world knew from the published diplomatic correspondence, the United States "has at no time and in no manner yielded any one of its rights as a neutral to any one of the present belligerents," but has conceded only the well-known limitations which war places upon neutral maritime commerce. Second, this Government attempted, not of right but as indicating its impartial good will, to obtain mutual concessions from the German and British Governments. In the third place, Mr. Bryan concluded,

> I note with sincere regret that in discussing the sale and exportation of arms by citizens of the United States to the enemies of Germany, your Excellency seems to be under the impression that it was within the choice of the Government of the United States, notwithstanding its professed neutrality and its diligent efforts to maintain it in other particulars, to inhibit this trade, and that its failure to do so manifested an unfair attitude toward Germany.
>
> This Government holds, as I believe your Excellency is aware and as it is constrained to hold in view of the present indisputable doctrines of accepted international law, that any change in its own laws of neutrality during the progress of a war, which would affect unequally the relations of the United States with the nations at war, would be an unjustifiable departure from the principle of strict neutrality, by which it has consistently sought to direct its actions, and I respectfully submit that none of the circumstances, urged in your Excellency's memorandum, alters the principle involved.
>
> The placing of an embargo on the trade in arms at the present time would constitute such a change and be a direct violation of the neutrality of the United States. It will, I feel assured, be clear to your Excellency that holding this view and considering itself in honor bound by it, it is out of the question for this Government to consider such a course.

"Frye," "Falaba," "Cushing," "Gulflight."—Meanwhile the sacrifice of American property and American lives to the German policy of frightfulness had already begun. Within a week after the war-zone decree went into effect, two American vessels laden with cotton for Bremen were sunk by mines off the German coast, the *Evelyn* on Feb. 20 and the *Carib* on Feb. 23. Two weeks later the German auxiliary cruiser *Prinz Eitel Friedrich* entered Newport News and reported the first instance of deliberate attack on an American ship. The commerce raider encountered in the South Atlantic the Bath sailing vessel *William P. Frye*, laden with 5,200 tons of wheat consigned from Seattle "to order" at Queenstown, Falmouth, or Portsmouth. The commander of the *Prinz Eitel Friedrich* decided that the wheat was contraband of war, had part of the *Frye's* cargo shoveled overboard, and then sank the vessel on Jan. 28 because he could not afford the time to dispose of the remainder. The United States Government promptly demanded reparation for this act, which Germany defended as legal under the principles of international law, while admitting liability to indemnify the owners under old Prussian-American treaties. After eight months of negotiation an agreement was reached for the assessment of the indemnity by two experts representing the German and American Governments and for the submission of the disputed questions of law and treaty interpretation to arbitration under the Hague Convention.

In the war zone the German submarine campaign against merchant shipping began promptly on Feb. 18. As a means of blockading the British coasts its insignificant effects were a sorry commentary upon Admiral Behncke's confident forecast. In ruthlessness, however, it speedily recommended itself to the most ardent apostle of *Schrecklichkeit*. The earliest of its major triumphs was the sinking of the Elder, Dempster liner *Falaba* in St. George's Channel on March 28. The *Falaba* was bound for Africa with some 160 passengers and

a crew of 90. The submarine gave the captain five minutes to get off the passengers and crew and torpedoed the ship as the lifeboats were being lowered over the side. One hundred and eleven of those on board lost their lives, among them Leon Chester Thrasher, an American citizen, native of Hardwick, Mass., returning to his employment as engineer on the Gold Coast. An official message from Berlin issued by the German Ambassador on April 6 raised the familiar plea of military necessity for hasty sinking of the *Falaba* and shifted the responsibility for the loss of life to Great Britain:

> The German Government regrets sacrifices of human lives, but both British ships and neutral passengers on board such ships were warned urgently and in time not to cross the war zone. Responsibility rests, therefore, with the British Government, which, contrary to international law, inaugurated commercial war against Germany and, contrary to international law, has caused merchant ships to offer armed resistance.

Within the next month, however, two American ships were deliberately attacked in the war zone. On April 28 a German aeroplane threw three bombs without effect at the Standard Oil tanker *Cushing,* which flew at the time the American flag and carried her name painted in large letters on the side. On May 1 a German submarine torpedoed without warning off the Sicily Islands the tanker *Gulflight,* bound for Rouen under the American flag. The vessel remained afloat and was later towed into port, but the captain, Alfred Gunter, died of heart failure induced by the shock, and two of the crew who jumped overboard were drowned. Here were all the elements to make the enforcement of "strict accountability" imperative, and the Government at once instituted inquiries in London and Berlin on which to base a demand for redress. But before the end of another week the outrage on the *Gulflight* was overshadowed by the crowning horror of the *Lusitania.*

The Sinking of the "Lusitania."—During the first ten weeks of the campaign against British commerce, up to April 29, German submarines in the war zone sank 63 merchant ships, several of them neutral vessels, with a loss of 250 lives. During the same period thousands of ships entered and cleared from British ports, British imports and exports increased from week to week, and British troop and supply ships carried a new army to France without the loss of a single man. Some more impressive demonstration was clearly necessary to preserve the glamour with which public opinion in Germany invested the submarine campaign, and since the submarines were incapable of victories of numerical or military importance, the only remaining avenue to distinguished success lay through the destruction of the hitherto unscathed fleet of great trans-Atlantic passenger liners. Against these accordingly the German submarine campaign was deliberately directed, and the first victim selected was the Cunard liner *Lusitania,* scheduled to sail from New York on May 1. The fate premeditated for the greatest British ship remaining in the Atlantic service was presaged in anonymous telephone warnings to intending passengers and in the following advertisement over the signature of the German Embassy placed in the leading papers of the country on the morning of the sailing of the *Lusitania:*

> Travelers intending to embark on the Atlantic voyage are reminded that a state of war exists between Germany and her allies and Great Britain and her allies; that the zone of war includes the waters adjacent to the British Isles; that, in accordance with formal notice given by the Imperial German Government, vessels flying the flag of Great Britain, or any of her allies, are liable to destruction in those waters and that travelers sailing in the war zone on ships of Great Britain or her allies do so at their own risk.

The *Lusitania* carried from New York a crew of 667 and 1,250 passengers (290 first cabin, 599 second-cabin and 361 steerage), among them 188 Americans. In her 1,500 tons of cargo were 4,200 cases of small-arm cartridges, 1,271 empty shrapnel cases, some 215 tons of brass and copper, 16 packages of wire, 189 packages of military goods, 17 packages of rubber, 25 barrels of lubricating oil, and a large quantity of food-

stuffs, furs, dry goods, etc. At 2.05 p. m. on Friday, May 7, while proceeding ten miles off the Old Head of Kinsale, the southeastern tip of Ireland, at a speed reduced to 18 knots to make the Liverpool bar at high water, the *Lusitania* was torpedoed twice without warning and sank in 18 minutes. Of the 1,917 souls on board only 764 (462 passengers and 302 crew) survived. Among the 1,153 victims perished 114 American men, women and children, including this roll of notable names: Charles Frohman, theatrical manager; Charles Klein, playwright; Justus Miles Forman, novelist and playwright; Elbert Hubbard, author and lecturer; Lindon Bates, Jr., vice-chairman of the Commission for Relief in Belgium; Alfred G. Vanderbilt; and Fred S. Pearson, engineer.

By this barbarous and stupid slaughter of innocent non-combatants, Germany achieved the most signal triumph of her submarine campaign, but at the cost of outraging the moral sense of the non-Teutonic world. In the United States the deliberate murder of scores of American citizens aroused a spontaneous and powerful outburst of indignation which overwhelmed the few German voices raised in justification of the act. Hitherto the American people had endured with patience a highly organized pro-German propaganda, often inept but pursued with the utmost vigor on the platform, in the press and through the mails, designed to win over to the Teutonic point of view a public opinion generally of strongly adverse sympathies (see *Neutrality, infra*). The attempted palliation of the *Lusitania* massacre was its last overt effort, and under the storm of protest which his contribution evoked, the semi-official protagonist of the German propaganda, Dr. Bernhard Dernburg, was constrained to abandon his campaign on behalf of *Kultur* and depart from the United States.

That the German Government was not insensible, even amid the popular rejoicings over the submarine triumph, to the effect of the sinking of the *Lusitania* upon neutral opinion, was demonstrated by a prompt withdrawal of the disclaimer of responsibility for "accidents" to neutral shipping in the war zone contained in the note of Feb. 16. A Foreign Office circular which reached Washington through Ambassador Gerard on May 11 declared that the German Government "naturally" had no intention of causing to be attacked by submarines or aircraft in the war zone neutral vessels guilty of no hostile act. On the contrary, the most definite instructions had been issued to German war vessels to avoid attacks on such ships, and even if they carried contraband they were dealt with by submarines solely according to the international law of prize. Should a neutral ship nevertheless come to harm through German submarines or aircraft as the result of an "unfortunate accident," neutrals were assured that the German Government would "unreservedly recognize its responsibility therefor" and would express regrets and afford damages without first instituting a prize-court action.

But for the sinking of the *Lusitania* the German Government had no compunction and assumed no responsibility. The official statement issued in Berlin on May 8 charged that the *Lusitania* was armed with guns and carried large quantities of war material, and placed the responsibility for the loss of life upon the owners, who chose to rely upon the protection of the British fleet rather than to heed the warnings of danger repeatedly and strongly given by the German Government and finally issued by the Embassy at Washington in a public notice. To similar effect, but placing the responsibility upon the British Government, was the following message of sympathy transmitted by Count von Bernstorff on the 10th:

> The German Government desires to express its deepest sympathy at the loss of lives on board the *Lusitania*. The responsibility rests, however, with the British Government, which, through its plan of starving the civilian population of Germany, has forced Germany to resort to retaliatory measures.
>
> In spite of the German offer to stop the submarine war in case the starvation plan was given up, British merchant vessels are being generally armed with guns and have repeatedly tried to ram submarines, so that a previous search was impossible. They cannot,

therefore, be treated as ordinary merchant vessels. . . . Besides, it has been openly admitted by the English press that the *Lusitania* on previous voyages repeatedly carried large quantities of war material. On the present voyage the *Lusitania* carried 5,400 cases of ammunition, while the rest of her cargo also consisted chiefly of contraband.

If England, after repeated official and unofficial warnings, considered herself able to declare that that boat ran no risk and thus light-heartedly assumed responsibility for the human life on board a steamer which, owing to its armament and cargo was liable to destruction, the German Government, in spite of its heartfelt sympathy for the loss of American lives, cannot but regret that Americans felt more inclined to trust to English promises rather than to pay attention to the warnings from the German side.

A reply of the British Government, issued on May 11 and dealing with the points of the German statement *seriatim*, denied that Germany had offered to abandon her submarine campaign; that the British Government had ever declared that the *Lusitania* ran no risk; and particularly that the vessel was armed or had been armed during the whole war. The latter charge was denied as soon as made by the manager of the Cunard Line and was officially refuted by Dudley Field Malone, collector of the port of New York.

"Omit Any Word or Any Act."—The United States Government now faced a diplomatic situation formidable in the extreme. On the one hand was the great mass of the American people, profoundly stirred by an atrocious crime and insistent that Germany be held to "strict accountability" for the American dead. On the other hand was the defiant German Government, backed by a press and people unanimously exultant over a great triumph of naval strategy. The Administration decided upon its course in a Cabinet meeting on May 11, and on the 13th the American Government dispatched to Germany the first of the series of clear and dignified notes in which President Wilson defined and asserted American rights.

In view of recent acts of German authorities in violation of American rights on the high seas, said the note, it was clearly wise and desirable that the American and German Governments should come to a clear and full understanding of the "grave situation" which had resulted. The sinking of the *Falaba*, the attack on the *Cushing*, the torpedoing of the *Gulflight*, and the sinking of the *Lusitania* constituted "a series of events which the Government of the United States has observed with growing concern, distress, and amazement." This Government had already taken occasion to inform the German Government that it could not admit the adoption of extraordinary methods of naval warfare as retaliatory measures against Germany's adversaries, or the warning of danger to neutral ships contained in the war-zone proclamation, "to operate as in any degree an abbreviation of the rights of American shipmasters or of American citizens bound on lawful errands as passengers on merchant ships of belligerent nationality." These rights it did not understand the German Government to question. On the contrary, it assumed that the German Government accept, as of course, "the rule that the lives of non-combatants, whether they be of neutral citizenship or citizens of one of the nations at war, cannot lawfully or rightfully be put in jeopardy by the capture or destruction of an unarmed merchantman," and recognize also the obligation to take the usual precaution of visit and search to determine without question belligerent nationality.

The Government of the United States, therefore, desires to call the attention of the Imperial German Government with the utmost earnestness to the fact that the objection to their present method of attack against the trade of their enemies lies in the practical impossibility of employing submarines in the destruction of commerce without disregarding those rules of fairness, reason, justice, and humanity which all modern opinion regards as imperative. It is practically impossible for the officers of a submarine to visit a merchantman at sea and examine her papers and cargo. It is practically impossible for them to make a prize of her; and, if they cannot put a prize crew on board of her, they cannot sink her without leaving her crew and all on board of her to the mercy of the sea in her small boats. These facts it is understood the Imperial German Government frankly admit. We are informed that in the instances of which we have spoken time enough for even that poor measure of safety was not

given, and, in at least two of the cases cited not so much as a warning was received. Manifestly, submarines cannot be used against merchantmen, as the last few weeks have shown, without an inevitable violation of many sacred principles of justice and humanity.

American citizens act within their indisputable rights in taking their ships and in traveling wherever their legitimate business calls them upon the high seas, and exercise those rights in what should be the well justified confidence that their lives will not be endangered by acts done in clear violation of universally acknowledged international obligations, and certainly in the confidence that their own Government will sustain them in the exercise of their rights.

A formal warning recently published in the newspapers as coming from the German Embassy at Washington, however, had stated, in effect, that any American citizen exercising his right of free travel upon the seas within the zone of German submarine warfare would do so at his peril. Without pausing to discuss the "surprising irregularity" of such a mode of communication to the people of the United States, the note affirmed that

> no warning that an unlawful and inhumane act will be committed can possibly be accepted as an excuse or palliation for that act or as an abatement of the responsibility for its commission.

The American Government found it impossible to believe, the note concluded, that the acts of lawlessness cited were committed except under a misapprehension of the orders issued by the German naval authorities. It assumed that

> the commanders even of submarines were expected to do nothing that would involve the lives of non-combatants or the safety of neutral ships, even at the cost of failing of their object of capture or destruction.

The Government of the United States, therefore, confidently expected the German Government to disavow the acts complained of, to make all possible reparation, and to take immediate steps to prevent their recurrence.

> Expressions of regret and offers of reparation in case of the destruction of neutral ships sunk by mistake, while they may satisfy international obligations, if no loss of life results, cannot justify or excuse a practice the natural and necessary effect of which is to subject nations and neutral persons to new and immeasurable risks.
>
> The Imperial German Government will not expect the Government of the United States to omit any word or any act necessary to the performance of its sacred duty of maintaining the rights of the United States and its citizens and of safeguarding their free exercise and enjoyment.

Indiscretions of President Wilson and Mr. Bryan.—The first public utterance of President Wilson after the sinking of the *Lusitania* was an address to several thousand newly naturalized citizens in Philadelphia on May 10, in the course of which he defined the individual consciousness demanded of America in the following terms:

> America must have this consciousness, that on all sides it touches elbows and touches heart with all the nations of mankind. The example of America must be a special example, the example of America must be the example, not merely of peace because it will not fight, but of peace because peace is the healing and elevating influence of the world; and strife is not.
>
> There is such a thing as a man being too proud to fight; there is such a thing as a nation being so right that it does not need to convince others by force that it is right.

An expectant public seized upon the phrase "too proud to fight" as indicative of the determined policy of the Administration on the *Lusitania* outrage, and to correct the unfavorable impression thus created the President was obliged to issue a formal statement that his remarks were not intended to have any direct reference to the *Lusitania* but to be broader and more general than the circumstances of any particular case. This reassurance was followed immediately by the emphatic note to Germany, which resolved the doubts of the American people in unmeasured satisfaction and approval.

By the German Government, however, the American note was received with puzzling unconcern, apparently explicable only on the assumption of a literal and immediate application of President Wilson's pacific utterances to the *Lusitania* case. The unfavorable inference drawn in America was current also in Europe, but the German Government had a very special reason for disregarding the refu-

tation of the President's statement and the American note. It was at this point, presumably on May 17, that Secretary Bryan held a conversation with Dr. Dumba, the Austro-Hungarian Ambassador, through which the impression was conveyed to Berlin that the firm tone of the American note was intended merely to impress home sentiment and was not to be taken seriously abroad. The fact of this conversation did not become known until late in June and no definite information of its nature has been published. Mr. Bryan, however, after his resignation as Secretary of State, confessed its influence on the diplomatic exchanges with Germany in the following statement issued on June 27:

> I reported to the President the conversation which I had with Ambassador Dumba and received his approval of what I had said. When we learned that the conversation had been misinterpreted in Berlin, I brought the matter to the attention of Ambassador Dumba, and secured from him a statement certifying to the correctness of the report of the conversation that I had made to the President. Ambassador Dumba's statement was sent to our Embassy at Berlin, and Ambassador Dumba also telegraphed the German Government, affirming the correctness of my report of the interview, and denying the construction that had been placed upon it.

"Just Self-Defense." — What this construction was the German note of May 28 clearly manifested. The American protest on the sinking of the *Lusitania* raised three main questions: the violation of the law of nations and the law of humanity by the destruction of merchant vessels without giving non-combatant passengers and crews a chance to escape; the inevitability of such violation in the use of submarines as commerce destroyers; and the measures to be taken by the German Government to repair and to prevent the recurrence of outrages such as those complained of. The reply of the German Government evaded all these issues, justified the sinking of the *Lusitania* by the plea of "just self-defense," and beclouded the demand for disavowal and reparation with a mass of quibbling and irrevelant contentions.

Dealing first with the minor counts of the American indictment, the German Government attributed the "isolated and exceptional cases" of submarine attack on neutral vessels by mistake to the British abuse of flags and careless or suspicious behavior of the masters of the ships. In all cases of attack by submarines or aircraft on neutral vessels not shown by investigation to have been at fault, the German Government had expressed regret and offered such reparation as the conditions justified. The same principles would be applied in the cases of the *Cushing* and the *Gulflight*, and the investigation then in progress might be supplemented, if necessary, by reference to the Hague tribunal. The sinking of the British steamer *Falaba*, on the other hand, was justified by the efforts of the vessel to escape and to summon assistance; the commander of the submarine was obliged thereby to forego his intention of giving the passengers and crew full opportunity for escape, and to torpedo the ship after 23 minutes of warning on the appearance of suspicious craft.

Turning to the sinking of the *Lusitania*, the German Government, having already expressed its regret for the loss of neutral lives, "must state for the rest the impression that certain important facts most directly connected with the sinking of the *Lusitania* may have escaped the attention of the Government of the United States," which "proceeds on the assumption that the *Lusitania* is to be considered as an ordinary, unarmed merchant vessel." The German Government begged "in this connection to point out that the *Lusitania* was one of the largest and fastest English commerce steamers constructed with government funds as auxiliary cruisers, and is expressly included in the navy list issued by the British Admiralty." Moreover, it was established by trustworthy evidence that for a considerable time practically all the more valuable British merchantmen had been equipped with cannon and ammunition and manned with gunners; the *Lusitania* when she left New York, according to information received, "undoubtedly had cannon aboard which were mounted under decks and masked." Further, the Ger-

man Government directed particular attention to the confidential instruction to British merchant vessels, alleged to have been issued by the Admiralty in February, advising them not only to assume the flags and distinguishing marks of neutrals but also, while thus disguised, to attack German submarines by ramming them, a practice to which British merchantmen were further incited by the offer and payment of high rewards for the destruction of German submarines. In view of these facts, indubitably known to it, the German Government was unable to regard British merchantmen in the war zone as "undefended territory," and German commanders were consequently "no longer in a position to observe the rules of capture otherwise usual."

Finally, the German Government was obliged to point out particularly that the *Lusitania* on her last trip, as on earlier occasions, carried Canadian troops and war material, "including no less than 5,400 cases of ammunition destined for the destruction of brave German soldiers."

The German Government believes that it acts in just self-defense when it seeks to protect the lives of its soldiers by destroying ammunition destined for the enemy with the means of war at its command. The English steamship company must have been aware of the dangers to which passengers on board the *Lusitania* were exposed under the circumstances. In taking them on board, in spite of this, the company quite deliberately tried to use the lives of American citizens as protection for the ammunition carried, and violated the clear provisions of American laws, which expressly prohibit and provide punishment for the carrying of passengers on ships which have explosives on board. The company thereby wantonly caused the death of so many passengers. According to the express report of the submarine commander concerned, which is further confirmed by all other reports, there can be no doubt that the rapid sinking of the *Lusitania* was primarily due to the explosion of the cargo of ammunition caused by the torpedo. Otherwise, in all probability, the passengers of the *Lusitania* would have been saved.

Activities of the German Ambassador.—However judicious this communication appeared to his superiors at Berlin, the German Ambassador at Washington was under no misapprehension of the powerful popular sentiment behind the American note and the universal dissatisfaction with the evasions of the German reply. The publication of the German note in the morning papers of May 31 was accompanied by an editorial outburst of resentful criticism of its trifling with the issues, and the intention of President Wilson to lose no time in drafting a reply was immediately evident. Count von Bernstorff at once sought and obtained an interview with President Wilson on June 2. No formal report of the interview was issued, but it was understood that the German Ambassador, having explained the difficulty of communicating with his Government over cables under British control, asked and received permission to send a detailed report on the situation to Berlin through and under the auspices of the Department of State. The President gave his approval also to a plan to inform the German authorities on American sentiment through the personal report of a special envoy of the German Embassy, Dr. Anton Meyer-Gerhard, who sailed from New York on June 3 under a safe conduct arranged by the Department of State.

The German Ambassador's efforts to interpret American sentiment to his own Government were coincident with other activities to convince the United States Government of the belligerent character of the *Lusitania*. In support of the German contention that the *Lusitania* was armed with guns, he submitted to the Department of State four affidavits in flat contradiction of the denial of the manager of the Cunard Line and the official report of Dudley Field Malone, collector of the port of New York. An investigation by the Department of Justice demonstrated the falsity of the charges, and on June 10 Gustav Stahl, one of the affiants and a German reservist, was arrested on a charge of perjury after swearing before a Federal grand jury at New York to having seen four masked guns on board the *Lusitania*. Stahl pleaded guilty on Sept. 8 and was sentenced to 18 months' imprisonment.

Reparation for the "Gulflight" and Attack on the "Nebraskan."—The German note of May 28 was followed

four days later by a supplementary communication on the *Gulflight* and the *Cushing*. From a scrutiny of the reports of submarine commanders, the note declared, the German Government had become convinced that the *Gulflight* had suffered from a mistaken attack by a German submarine. From the attendant circumstances there could be no doubt that the attack was to be attributed to an unfortunate accident, and not to the fault of the commander. Nevertheless,

> The German Government expresses its regrets to the Government of the United States concerning this incident, and declares itself ready to furnish full recompense for the damage thereby sustained by American citizens.

In the case of the *Cushing*, the fact of attack by a German aeroplane was proximately but not conclusively established by official records, and the German Government requested the submission of the evidence in possession of the United States before committing itself to a definite position in this case.

If the offer of reparation for the *Gulflight* was intended to mollify American sentiment, its effect was nullified by a fresh attack upon an American ship in the war zone. An hour after sunset on May 25 the American steamer *Nebraskan*, out of Liverpool for Delaware Breakwater in ballast, was damaged by an external explosion when 40 miles off Fastnet. Although none of the crew was seriously injured and the vessel was able to return to Liverpool under her own steam, the incident inflamed still further the excitement of the American press over the crisis in the relations between the United States and Germany. Conclusive evidence of submarine attack was not immediately available, but the presumption was strongly supported by Ambassador Page's report, published on May 29, on the testimony of the ship's officers and an examination of the hull by naval experts attached to the American Embassy at London.

The Resignation of Secretary Bryan.—On the eve of the dispatch of the second protest to Germany, William J. Bryan chose to resign the office of Secretary of State rather than attach his signature to the note. Between him and the President, it was reported after Mr. Bryan's withdrawal from the Administration, disagreement on the policy to be pursued on the *Lusitania* outrage had existed since the Cabinet meeting at which President Wilson submitted the draft of his note of May 13. At that time Mr. Bryan counselled peaceful measures and cautious action and consented to sign the note only in consideration of a tentative arrangement that a statement should be issued by the President and transmitted to the German Government, announcing that inasmuch as Germany had accepted the principle of the peace treaties negotiated by Mr. Bryan with 30 countries (*A. Y. B.*, 1913, p. 113), differences between the United States and Germany might be adjusted by an international commission of inquiry as provided in the Bryan plan. This course was strongly opposed by other members of the Cabinet, on the ground that such an appendix to the note would be construed abroad as a weakening of the American position, and the President, after considering Mr. Bryan's suggestion at length, finally disapproved it at the hour the note was dispatched to Berlin.

Mr. Bryan's letter of resignation, tendered and accepted by President Wilson on June 8, was in the following terms:

> Obedient to your sense of duty and actuated by the highest motives, you have prepared for transmission to the German Government a note in which I cannot join without violating what I deem to be an obligation to my country, and the issue involved is of such moment that to remain a member of the Cabinet would be as unfair to you as it would be to the cause which is nearest my heart, namely, the prevention of war.
>
> I, therefore, respectfully tender my resignation, to take effect when the note is sent, unless you prefer an earlier hour. Alike desirous of reaching a peaceful solution of the problems arising out of the use of submarines against merchantmen, we find ourselves differing irreconcilably as to the methods which should be employed.
>
> It falls to your lot to speak officially for the nation. I consider it to be none the less my duty to endeavor as a private citizen to promote the end which you have in view by means which you do not feel at liberty to use.

Simultaneously with the dispatch of the note to Germany on the following day, and before its publication, Mr. Bryan retired to private life and issued to the press the first of several statements in explanation of his disagreement with the President on the *Lusitania* issue. The two chief points of difference, he said, were, first, as to the suggestion of investigation by an international commission, and, second, as to warning Americans against traveling on belligerent vessels or with cargoes of ammunition. As a private citizen he resumed his freedom "to urge both of these propositions and to call public attention to these remedies in the hope of securing such an expression of public sentiment as will support the President in employing these remedies if in the future he finds it consistent with his sense of duty to favor them."

The Second "Lusitania" Note.—Unfortunately for Mr. Bryan's campaign, his conception of the duty of the United States Government in dealing with the *Lusitania* massacre appealed, outside his own small class of extreme pacificists, only to the supporters of the German cause. While the former Secretary of State was welcomed as a recruit to the waning pro-German propaganda, the mass of the American people repudiated his doctrine and gave to the President's second note to Germany the same unqualified approval as its predecessor received. The American note of June 9 was neither harsh nor provocative; it maintained the courteous and statesman-like tone of the earlier communication, but none the less firmly reiterated the principles and demands set forth therein and rejected the specious arguments of the German reply.

At the outset, the United States Government noted with gratification the full recognition by the German Government in discussing the cases of the *Cushing* and the *Gulflight* of the principle of the freedom of all parts of the open sea to neutral ships, and its willingness to meet its liability for hostile attack on innocent neutral vessels. But with regard to the sinking of the *Falaba*, by which an American citizen lost his life, the note expressed surprise to find the German Government contending that the effort of a merchantman to escape capture and summon assistance altered the obligation of the captor in respect of the safety of the lives of those on board, although the vessel had ceased her attempt to escape when torpedoed. These circumstances, the note declared, were not new, but had been in the minds of international jurists throughout the development of naval warfare. Nothing but actual forcible resistance or continued efforts of a merchantman to escape by flight when ordered to stop for the purpose of visit had ever been held to forfeit the lives of her passengers or crew.

Turning to the allegation of the German note regarding the belligerent character and armament of the *Lusitania*, the Government of the United States, the note continued, was fortunately in a position to give the German Government official information on these matters. It was its duty to see that the *Lusitania* was not armed for offensive action, that she was not serving as a transport, that she carried no cargo prohibited by American law, and that, if in fact she was a naval vessel of Great Britain, she should not receive clearance as a merchantman. It performed that duty and enforced its statutes with scrupulous vigilance through its regularly constituted officials. As to the contentions of the German Government regarding the carriage of contraband on board the *Lusitania* and the explosion of that material by the torpedo, the note continued, "it need only be said that in the view of this Government these contentions are irrelevant to the question of the legality of the methods used by the German naval authorities in sinking the vessel."

The sinking of passenger ships involves principles of humanity which throw into the background any special circumstances of detail that may be thought to affect the cases, principles which lift it, as the Imperial German Government will no doubt be quick to recognize and acknowledge, out of the class of ordinary subjects of diplomatic discussion or of international controversy. Whatever be the other facts re-

garding the *Lusitania*, the principal fact is that a great steamer, primarily and chiefly a conveyance for passengers, and carrying more than a thousand souls who had no part or lot in the conduct of the war, was torpedoed and sunk without so much as a challenge or a warning, and that men, women and children were sent to their death in circumstances unparalleled in modern warfare. The fact that more than one hundred American citizens were among those who perished made it the duty of the Government of the United States to speak of these things and once more, with solemn emphasis, to call the attention of the Imperial German Government to the grave responsibility which the Government of the United States conceives that it has incurred in this tragic occurrence, and to the indisputable principle upon which that responsibility rests. The Government of the United States is contending for something much greater than mere rights of property or privileges of commerce. It is contending for nothing less high and sacred than the rights of humanity, which every Government honors itself in respecting and which no Government is justified in resigning on behalf of those under its care and authority. Only her actual resistance to capture or refusal to stop when ordered to do so for the purpose of visit could have afforded the commander of the submarine any justification for so much as putting the lives of those on board the ship in jeopardy. . . . . It is upon this principle of humanity, as well as upon the law founded upon this principle, that the United States must stand.

This Government therefore "very earnestly and very solemnly" renewed the representations of the note of May 13, relying in these representations upon "the principles of humanity, the universally recognized understandings of international law, and the ancient friendship of the German nation." Repeating the principles of the earlier note on the freedom of the seas to neutrals and the obligation of belligerents to respect the lives of non-combatants in naval warfare,

> the Government of the United States deems it reasonable to expect that the Imperial German Government will adopt the measures necessary to put these principles into practice in respect of the safeguarding of American lives and American ships, and asks for assurances that this will be done.

German Evasions and Compromise Proposals.—Mr. Bryan's spectacular withdrawal from the Department of State startled the German press much more than it impressed American opinion. In the United States his position in the Administration was quite clearly understood and his responsibility for the conduct of foreign relations estimated at its true value. In Germany, on the other hand, where resentment against the United States and all things American had now reached a high pitch, popular opinion was accustomed to regard Mr. Bryan as a British tool, and his resignation threw the press into confusion and amazement. While one section was inclined to accept the view of his warmest Teutonic admirers at home that Mr. Bryan was the custodian of America's conscience, another element declined to believe that he had urged or desired an amelioration of the demands of the United States on the issue of the *Lusitania*. The German press, however, was unanimous in declaring that whoever might succeed Mr. Bryan as Secretary of State, and whatever the contents of the American note might be, Germany would relentlessly continue her submarine campaign so long as Britain persisted in her blockade. Indeed, Count von Reventlow, the ardent champion of the Admiralty in the Berlin *Tageszeitung*, challenged the submarines to sink the liners *Orduna* and *Arabic* as quickly as possible, since England did not "seem to have been intimidated by the sinking of the *Lusitania*."

But during the month which Germany took to frame a reply to the second *Lusitania* note, the attitude of the German press towards the controversy with the United States underwent a noteworthy change, of a kind to suggest that previous misconceptions of American sentiment were giving way to a realization of the critical nature of the situation. For the first time the German press openly divided on the question of relations with the United States. Hitherto German official and popular opinion appeared to be comprehended in the uncompromising doctrine of Count von Reventlow, who went so far as to declare in the *Tageszeitung* that a breach with the United States would be a less calamity than a modification of the rules of the submarine campaign. Now, however, influential newspapers like the *Lokal Anzeiger*

of Berlin undertook to defend the necessity of preserving American friendship, and an angry retort by von Reventlow with a reference to "incompetent statesmen" condemned the *Tageszeitung* to a temporary suspension. More remarkable still was a discussion of the American protest against the submarine warfare published in *Der Tag* early in July by Admiral von Truppel, a naval officer in high standing, subject in all respects to the orders of the German Admiralty. Besides urging that a breach with the United States would be extremely serious to the German cause, Admiral von Truppel plainly intimated his opinion that the campaign against British commerce was futile, and frankly asked the German people, "Can we hope, so far as we are able to foresee, that we shall force England to her knees through submarine warfare against her commerce?"

These incidents indicated some slight recovery of the independence of the German Foreign Office from military control, and more certainly the willingness of the German Government to open the American crisis to public discussion. But this altered attitude, it was soon to appear, implied no reversal of policy but merely a shift of ground designed to open the way to a possible advantageous compromise of the issue with the United States. For a week before the German note of July 8 was transmitted to Washington, the Foreign Office endeavored to sound the United States Government through semi-official inquiries of Ambassador Gerard on a number of counter-proposals which President Wilson refused to discuss. It was plainly evident from these preliminary intimations of the contents of the reply that Germany proposed to meet the definite demands of the United States with further evasions and to offer fair words in reparation for the slaughter of the *Lusitania*.

If during the present war, said the note, the principles of humanity "have been traversed more and more the longer its duration, the German Government has no guilt therein." From the very beginning of the war Germany's adversaries, by completely paralyzing peaceable traffic between Germany and the neutral countries, had aimed at the life of the German nation, "repudiating in so doing all the rules of international law and disregarding all the rights of neutrals." While her enemies had openly proclaimed war without mercy to her utter destruction, Germany was "conducting war in self-defense for her national existence and for the sake of peace of assured permanency." She had been obliged to adopt submarine warfare to meet the declared intentions of her enemies and the method of warfare adopted by them in contravention of international law.

With all its efforts in principle to protect neutral life and property from damage as much as possible, the German Government recognized unreservedly in its memorandum of Feb. 4 that the interests of neutrals might suffer from the submarine warfare. However, the American Government will also understand and appreciate that in the fight for existence which has been forced upon Germany by its adversaries and announced by them it is the sacred duty of the Imperial Government to do all within its power to protect and save the lives of German subjects. If the Imperial Government were derelict in those, its duties, it would be guilty before God and history of the violation of those principles of highest humanity which are the foundation of every national existence.

The case of the *Lusitania* shows with horrible clearness to what jeopardizing of human lives the manner of conducting war employed by our adversaries leads. In the most direct contradiction of international law all distinctions between merchantmen and war vessels have been obliterated by the order to British merchantmen to arm themselves and to ram submarines, and the promise of rewards therefor, and neutrals who use merchantmen as travelers thereby have been exposed in an increasing degree to all the dangers of war.

If the commander of the German submarine which destroyed the *Lusitania* had caused the crew and passengers to take to the boats before firing a torpedo this would have meant the sure destruction of his own vessel. After the experiences in sinking much smaller and less seaworthy vessels, it was to be expected that a mighty ship like the *Lusitania* would remain above water long enough even after the torpedoing to permit passengers to enter the ship's boats. Circumstances of a very peculiar kind, especially the presence on board of large quantities of highly explosive materials, defeated this expectation. In addition,

it may be pointed out that if the *Lusitania* had been spared, thousands of cases of munitions would have been sent to Germany's enemies and thereby thousands of German mothers and children robbed of bread winners.

In the spirit of friendship with which the German nation had been imbued towards the United States from the earliest days of its existence, the German Government declared itself ready "to do all it can, during the present war also, to prevent the jeopardizing of the lives of American citizens." It repeated its assurances that American ships should not be hindered in the prosecution of legitimate shipping and that the lives of American citizens on neutral vessels should not be placed in jeopardy. It promised that German submarines would be instructed to permit the free and safe passage of American passenger steamers when made recognizable by special markings and notified a reasonable time in advance, but it confidently hoped that "the American Government will assume the guarantee that these vessels have no contraband on board." To furnish adequate facilities for travel across the Atlantic for American citizens, the German Government submitted a proposal "to increase the number of available steamers by installing in the passenger service a reasonable number of neutral steamers" under the American flag, under the conditions specified for American passenger ships. No compelling necessity appeared therefore for American citizens to travel on ships under an enemy flag.

In particular the Imperial Government is unable to admit that American citizens can protect an enemy ship through the mere fact of their presence on board. Germany merely followed England's example when she declared part of the high seas an area of war. Consequently accidents suffered by neutrals on enemy ships cannot well be judged differently from accidents to which neutrals are at all times exposed at the seat of war on land when they betake themselves into dangerous localities in spite of previous warnings.

If the American Government found it impossible to acquire an adequate number of neutral passenger steamers, the German Government was prepared to interpose no objection to the transfer to the American flag of four enemy passenger ships for passenger traffic between America and England.

Reparation for the "Nebraskan" and Attack on the "Orduna."—The second German note, like its predecessor, was followed by a palliative in the form of an unsolicited offer of reparation for the attack on the American steamer *Nebraskan*. Without waiting for a protest from Washington, the German Government delivered to Ambassador Gerard on July 12 a memorandum acknowledging the responsibility of a German submarine. It explained that at the time of the attack the vessel carried no flag or visible neutral markings, and hence the submarine commander, "from his wide experience in the area of maritime war," was obliged to assume the *Nebraskan* to be an enemy ship. The attack, the memorandum declared, was not meant for the American flag; nor was it traceable to any fault on the part of the submarine commander, but was to be considered an unfortunate accident. The German Government expressed its regret at the occurrence and declared its willingness to make compensation for the damage sustained by American citizens.

But just as the offer of reparation for the *Gulflight* had succeeded a further outrage of American rights, the parallel between the *sequelae* of the first and second German notes was completed by a submarine attack on the Cunard liner *Orduna*, reported on the arrival of the vessel at New York on July 17. The *Orduna* left Liverpool on July 8 with a crew of 265 and 227 passengers, among them 21 Americans. Early on the morning of the 9th, when the *Orduna* was about 37 miles south of Queenstown, a German submarine gave the first intimation of its presence by launching a torpedo which missed the vessel by a margin of a few feet astern. Coming to the surface immediately, the submarine began shelling the *Orduna* at a distance of about three-fourths of a mile and continued the attack until the vessel escaped unscathed through superior seamanship and speed.

For several weeks the proceedings

of German submarine commanders in attacks on merchantmen, enemy as well as neutral, had suggested that the campaign was no longer governed by the principles of uncompromising ruthlessness announced in the war-zone decree. The sinking on June 28 of the Dominion liner *Armenian*, out of Newport News for Avonmouth with a cargo of mules for the British Army, the most startling of recent incidents because of the killing of eleven American members of the crew, was extenuated by the admitted efforts of the vessel to escape. Instances of preliminary visit and search, with ample provision for the safety of non-combatants, were reported with sufficient frequency and regularity to encourage the hope that the German Government had adopted modifications of its lawless methods of naval warfare which it was not yet prepared to acknowledge. But the wanton attack on another trans-Atlantic passenger steamer on her westbound voyage dispelled the effect of these promising indications and added to the tension of the crisis which was soon to culminate in the final great achievement of the submarines in the war zone.

"Deliberately Unfriendly." — From the moment of the delivery of the German note of July 8, it was clear that to give the German Government another opportunity to temporize was to court the danger of further injuries and indignities likely to force upon the United States the calamity of a war which Government and people were alike anxious to avoid. The jingo element in the country was neither numerous nor powerful, and the American press, unanimous in denouncing the inhumanity of German warfare and the cynicism of German notes, was almost equally a unit in wishing for a peaceful issue of the crisis. But if the few jingoes were unrepresentative of one aspect of American sentiment, none the less so of another phase were the advocates of peace at the expense of national honor. The great mass of the American people, while earnestly desiring peace, were in no wise dismayed by the implication of the Government's insistence on reparation for the murders of the *Lusitania*. In reply to a definite demand for assurances against further outrages of the same kind, the latest German note had utterly ignored the fundamental contentions of the United States Government. It waived aside an unmistakable challenge of the legality and humanity of Germany's submarine warfare, and entered a plea of confession and avoidance, followed by a proposal to compromise the rights for which the United States demanded complete recognition and respect. The obvious policy of the German Government to protract the correspondence and confuse the issue gave the United States no choice but to bring the discussion to a definite and decisive stage, and the third and final note of July 21 put American principles and the temper of the American people beyond the possibility of cavil or misunderstanding.

The note wasted no words in diplomatic preliminaries. Its opening sentence informed the German Government that the note of July 8 had been found

> very unsatisfactory, because it fails to meet the real differences between the two Governments and indicates no way in which the accepted principles of law and humanity may be applied in the grave matter in controversy, but proposes, on the contrary, arrangements for a partial suspension of those principles which virtually set them aside.

While the United States Government noted with satisfaction the unreserved recognition which the German Government accorded to the validity of the principles insisted on in the several American communications on the subject of the war-zone proclamation and the use of submarines against merchantmen on the high seas, it was

> keenly disappointed to find that the Imperial German Government regards itself as in large degree exempt from the obligation to observe these principles, even where neutral vessels are concerned, by what it believes the policy and practice of the Government of Great Britain to be in the present war with regard to neutral commerce. . . .
>
> Illegal and inhuman acts, however justifiable they may be thought to be, against an enemy who is believed to have acted in contravention of law and humanity, are manifestly indefensible when they deprive neutrals of their ac-

knowledged rights, particularly when they violate the right to life itself. If a belligerent cannot retaliate against an enemy without injuring the lives of neutrals, as well as their property, humanity, as well as justice and a due regard for the dignity of neutral powers, should dictate that the practice be discontinued. If persisted in it would in such circumstances constitute an unpardonable offense against the sovereignty of the neutral nation affected.

The United States Government, the note continued, was ready to make every reasonable allowance for the new and unexpected aspects of war at sea produced by the introduction of the submarine, but it could not consent

to abate any essential or fundamental right of its people because of a mere alteration of circumstances. The rights of neutrals in time of war are based upon principle, not upon expediency, and the principles are immutable. It is the duty and obligation of belligerents to find a way to adapt the new circumstances to them.

The events of the past two months, it was urged, had clearly indicated the possibility and practicability of conducting submarine operations in substantial accord with the accepted principles of regulated warfare.

In view of the admission of illegality made by the Imperial Government when it pleaded the right of retaliation in defense of its acts, and in view of the manifest possibility of conforming to the established rules of naval warfare, the Government of the United States cannot believe that the Imperial Government will longer refrain from disavowing the wanton act of its naval commander in sinking the *Lusitania* or from offering reparation for the American lives lost, so far as reparation can be made for a needless destruction of human life by an illegal act.

The Government of the United States, while not indifferent to the friendly spirit in which it is made, cannot accept the suggestion of the Imperial German Government that certain vessels be designated and agreed upon which shall be free on the seas now illegally proscribed. The very agreement would, by implication, subject other vessels to illegal attack, and would be a curtailment and therefore an abandonment of the principles for which this Government contends, and which in times of calmer counsels every nation would concede as of course.

For the principle of the freedom of the seas, the United States Government declared it would continue to contend, "from whatever quarter violated, without compromise and at any cost."

The very value which this Government sets upon the long and unbroken friendship between the people and Government of the United States and the people and Government of the German nation impels it to press very solemnly upon the Imperial German Government the necessity for a scrupulous observance of neutral rights in this critical matter. Friendship itself prompts it to say to the Imperial Government that repetition by the commanders of German naval vessels of acts in contravention of those rights must be regarded by the Government of the United States, when they affect American citizens, as deliberately unfriendly.

The Crisis of the "Arabic."—This final word of the United States left the continuance of friendly relations between the two nations wholly to the determination of Germany. While it conveyed a warning in the most significant terms known to diplomacy, the American note demanded no reply save the future conduct of submarine operations against merchant vessels flying the American flag or carrying American citizens in consonance with the rules of civilized warfare. Indeed, American opinion was not insensible to the difficult position of the German Government, and in subordinating importunity for disavowal of the *Lusitania* outrage to the immediate requirement of future immunity, this Government gave Germany the fullest opportunity to modify her policy in recognition of American rights with the least offense to popular prejudices against the United States and popular obsessions of the glorious achievements of the submarine campaign. To the German mind, inflamed with anger against the United States by the supply of munitions to the Allies, the American note carried nothing but added conviction of partisanship. Contrasting the laxity of the American protests against British restraints on neutral commerce with the prompt and unqualified repudiation of German arguments and concessions, the German press almost unanimously denounced the tone and content of the American note as unfriendly and unneutral, and forecast Germany's answer in a prosecution of the submarine campaign, now at the zenith of success and pop-

ularity, without regard to consequences.

Four days after the dispatch of the American note to Berlin, on July 25, a German submarine sank the American steamer *Leelanaw* 60 miles north of the Orkneys. The *Leelanaw* was bound from Archangel for Belfast with a cargo of flax, which by decree of April 21 the German Government had declared absolute contraband. The case was analogous to that of the *William P. Frye* (see *supra*), was susceptible of settlement in the same manner, and, as full provision was made for the safety of the crew, added no complication to the main issue between the United States and Germany. In the latter important respect, indeed, the submarine campaign had lost much of its early ruthlessness. Preliminary warning and ample time for the escape of noncombatants were now the rule rather than the exception, and during the following weeks instances of wanton destruction of human life became less and less frequent. From these continued indications of a modified policy American opinion again drew the hopeful inferences which preceded the attack on the *Orduna*, and was thus in a measure disarmed against the shock of the sinking of the White Star liner *Arabic*, which was now to bring our relations with Germany to a definite crisis.

The *Arabic*, one of the largest vessels of the White Star fleet, left Liverpool for New York on Aug. 18 with a crew of 243 and a passenger list of 180, among whom were 29 Americans. On the following morning, about 60 miles off Fastnet and not far from the scene of the *Lusitania* massacre, she was torpedoed by a German submarine without warning of any kind and sank in 11 minutes. Among the 44 victims (25 of the crew and 19 passengers) were two American citizens, Mrs. Josephine L. Bruguière of New York and Dr. Edmund F. Woods of Janesville, Wis. Compared with the *Lusitania* horror, the loss of life was fortunately small, but the situation created by the sinking of the *Arabic* was immeasurably graver. Here, it seemed, was Germany's answer to American warnings, a "deliberately unfriendly" act calling for prompt and drastic action. The course of the Administration was understood to be predetermined and to the community at large the circumstances of the *Arabic* outrage admitted no alternative to the immediate rupture of diplomatic relations.

At this crisis German diplomacy reasserted itself against the idolatry of von Tirpitz and his naval policy. On the eve of the dispatch of a final note to Berlin, the German Government asked for suspension of judgment in the following communication delivered by Count von Bernstorff on Aug. 24:

> So far no official information is available concerning the sinking of the *Arabic*. The German Government trusts that the American Government will not take a definite stand after hearing only the reports of one side, which, in the opinion of the Imperial Government, cannot correspond with the facts, but that a chance will be given to Germany to be heard equally. . . .
>
> If Americans should actually have lost their lives this would naturally be contrary to our intentions. The German Government would deeply regret the fact and begs to tender its sincerest sympathies to the American Government.

While the language of this memorandum was vague and inconclusive, it instantly relieved the tension in the United States. It was universally recognized that in the circumstances Count von Bernstorff's brief communication was almost necessarily preliminary to far more positive concessions by the German Government. This inference was corroborated by Dr. von Bethmann-Hollweg, the Imperial Chancellor, in a statement issued to the Berlin representatives of the Associated Press on the following day. The Chancellor, after explaining the lack of definite information of the facts of the *Arabic* case, gave this first intimation of the existence of restrictive instructions to submarine commanders to bring their operations within the bounds of humanity and international law:

> Only after all these circumstances have been cleared up will it be possible to say whether the commander of one of our submarines went beyond his instructions, in which case the Imperial Government would not hesitate to give such complete satisfaction to the United

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States as would conform to the friendly relations existing between both Governments.

On the 27th Count von Bernstorff translated this statement into a formal oral assurance of "complete satisfaction," and on Sept. 1, after a conference with Secretary Lansing, delivered to him the following memorandum, with which the *Arabic* crisis finally passed:

My instructions concerning our answer to your last *Lusitania* note contains the following passage:

"Liners will not be sunk by our submarines without warning and without safety of the lives of non-combatants, provided that the liners do not try to escape or offer resistance."

Although I know that you do not wish to discuss the *Lusitania* question till the *Arabic* incident has been definitely and satisfactorily settled, I desire to inform you of the above because this policy of my Government was decided on before the *Arabic* incident occurred.

Secretary Lansing accompanied the publication of the German Ambassador's memorandum with the following comment:

In view of the clearness of the foregoing statement, it seems needless to make any comment in regard to it, other than to say that it appears to be a recognition of the fundamental principle for which we have contended.

Disavowal and Apology. — Having conceded so much in principle, however, the German Government was not yet prepared to make good its assurances of "complete satisfaction" for the sinking of the *Arabic*. The facts of the case, as authenticated by affidavits transmitted to the State Department by Ambassador Page, clearly proved the absence of any extenuating circumstances. Nevertheless, the German Government not only put forward a plea of justification on the ground of assumed intention to attack, but claimed exemption from obligation to grant indemnity for outrages committed by submarines acting in supposed self-defense, however mistaken the assumption of necessity. The commander of the submarine which sank the *Arabic*, it explained in a memorandum delivered to Ambassador Gerard on Sept. 7, was convinced by the course steered by the vessel that she intended to attack and ram him. By his instructions he "was not allowed to attack the *Arabic* without warning and without saving the lives unless the ship attempted to escape or offer resistance," but he was forced to conclude from the attendant circumstances that the vessel planned a violent attack, which he anticipated by submerging and firing a torpedo.

The German Government most deeply regrets that lives were lost through the action of the commander. It particularly expresses this regret to the Government of the United States on account of the death of American citizens. The German Government is unable, however, to acknowledge any obligation to grant indemnity in the matter, even if the commander should have been mistaken as to the aggressive intentions of the *Arabic*. If it should prove to be the case that it is impossible for the German and the American Government to reach a harmonious opinion on this point, the German Government would be prepared to submit the difference of opinion as being a question of international law to The Hague tribunals. . . . In so doing it assumes that as a matter of course the arbitral decision shall not be admitted to have the importance of a general decision on the permissibility or the converse under international law of German submarine warfare.

This communication was followed two days later by a memorandum explanatory of the attack on the *Orduna*, in response to a request for a report submitted by the American Government on July 27 and renewed on Sept. 1. From this it appeared that the modified instructions regarding attacks on passenger liners were issued to submarine commanders before the dispatch of the second German note on the sinking of the *Lusitania*. In the attack on the *Orduna*, the German Government was constrained to admit that its instructions had been disregarded; still, it did not scruple to advance the claim that such an offense was excusable if the error arose from the inability of a submarine commander to determine with accuracy the size of the vessel with which he had to deal. The memorandum of Sept. 9, which the State Department withheld from publication until late in October, explained that the *Orduna* was taken for a small enemy steamer, "on account of the difficulty of observation caused by the unfavorable weather," and as

such was attacked with a torpedo which missed its mark. The subsequent chase and shelling of the vessel likewise failed because of unfavorable sea conditions.

The first attack on the *Orduna* by a torpedo was not in accordance with the existing instructions, which provide that large passenger steamers are only to be torpedoed after previous warning and after the rescuing of passengers and crew. The failure to observe the instructions was based on an error, which is at any rate comprehensible, and the repetition of which appears to be out of the question, in view of the more explicit instructions issued in the meantime. Moreover, the commanders of the submarines have been reminded that it is their duty to exercise greater care and to observe carefully the orders issued.

The German memorandum on the *Arabic* obviously fell far short of the satisfaction demanded by the United States and formally assured by Count von Bernstorff. It plainly implied that the German Government was not yet ready to abandon its policy of evasion and still hoped to content the United States with an avowal of a high principle of action, coupled with a reservation preserving a way of escape from accountability for specific violations. Both the *Arabic* and the *Orduna* memoranda offered excuses for flagrant attacks of the sort the German Government claimed to have prohibited which set up the judgment of timid or unscrupulous submarine commanders as to conditions of observance of instructions as a complete vindication against claims for redress. Clearly, the plea submitted in justification of the sinking of the *Arabic* without notice could be applied in any future case of similar outrage, and its acceptance would wholly nullify the practical effect of the German Ambassador's assurances of Sept. 1.

With this inadmissible reservation the *Arabic* memorandum carried its own rejection as a fulfilment of promises of "complete satisfaction." Furthermore, it intensified in popular opinion grave suspicion of the good faith of the German Government already aroused by a disaster to the Canadian liner *Hesperian*, which all reports attributed to submarine agency. The *Hesperian*, westbound from Liverpool for Montreal with 650 passengers and crew, was damaged by an external explosion on the evening of Sept. 4 when 70 miles off Fastnet. Although the vessel remained afloat until the morning of the 6th, 26 persons lost their lives in the explosion and subsequent abandonment of the ship. The German Government declared in a note delivered to the State Department on Sept. 16 that, according to the prearranged distribution, no German submarine should have been in the vicinity of the disaster, and in the absence of conclusive evidence of torpedo attack, this Government tentatively accepted the theory of a mine explosion.[1]

The *Hesperian* disaster, however, served to emphasize the necessity of a prompt and definite understanding with Germany, and the Administration continued to press through Count von Bernstorff its claim for full reparation for the sinking of the *Arabic*. After another month of negotiation, the German Government took the final step of retreat from its position of eight months before, and on Oct. 5 Count von Bernstorff delivered the following note of disavowal and apology:

Prompted by the desire to reach a satisfactory agreement with regard to the *Arabic* incident, my Government has given me the following instructions:

The orders issued by His Majesty the Emperor to the commanders of the German submarines—of which I notified you on a previous occasion—have been made so stringent that the recurrence of incidents similar to the *Arabic* case is considered out of the question.

According to the report of Commander Schneider of the submarine that sank the *Arabic*, and his affidavit as well as those of his men, Commander Schneider was convinced that the *Arabic* intended to ram the submarine. On

[1] As in the case of the *Nebraskan*, the tangible evidence of torpedo attack was a fragment of metal said to have been picked up on the deck of the *Hesperian* after the explosion. This the British Admiralty forwarded to the United States for examination; and on Oct. 30 the State Department announced that the American naval experts to whom it was submitted had pronounced it part of a torpedo. Except the statement of the British Admiralty, however, the State Department had no proof that the metal was actually found as reported, and the subject was not revived in the negotiations with Germany.

the other hand, the Imperial Government does not doubt the good faith of the affidavits of the British officers of the *Arabic*, according to which the *Arabic* did not intend to ram the submarine. The attack of the submarine, therefore, was undertaken against the instructions issued to the commander. The Imperial Government regrets and disavows this act and has notified Commander Schneider accordingly.

Under these circumstances my Government is prepared to pay an indemnity for the American lives which to its deep regret have been lost on the *Arabic*. I am authorized to negotiate with you about the amount of this indemnity.

Qualifications of the American Victory. — In compelling this complete surrender of the German Government on the issue of the *Arabic*, American diplomacy unquestionably achieved a notable triumph. It had to deal with the representatives of a proud and arrogant nation, blinded by a belief in its universal superiority and infallible righteousness, steeped in the gospel of physical force, and obsessed by a notion of invincibility against all possible foes. From this nation American diplomacy exacted in formal terms the abandonment of an essential element of the policy of maritime terrorism which alone relieved the impotence of its naval arm, and the observance of principles of law and humanity which for eight months it had repudiated and outraged. From the American point of view, the immediate practical effect of the *Arabic* settlement was to dispel the crisis which more than once threatened to end in a rupture of diplomatic relations with Germany, with war as a possible sequel, and to remove the chief danger of its revival through further outrages on American rights.

Thus far the victory of the United States was substantial, but it was subject to important qualifications both in substance and in principle. That the engagement of the German Government to provide for the safety of the passengers and crews of "large passenger steamers" offered no guaranty against further sacrifice of American lives in the sinking of cargo vessels remains so far only potentially significant. But the slaughter of scores of American citizens in the sinking of the *Lusitania* remains wholly unredressed, and the negotiations between Mr. Lansing and Count von Bernstorff on this issue during the last two months of the year have yielded on the German side nothing but unacceptable offers of compromise, although the American notes of May 13 and July 21 demanded disavowal and reparation as complete as that secured in the case of the *Arabic*. No moral regeneration, it is evident, dictated Germany's surrender in the *Arabic* crisis, and the great moral triumph with which American opinion in its first enthusiasm was inclined to identify that diplomatic achievement is obliterated not only by the haggling over the *Lusitania* outrage but also by the issue of the German submarine campaign in the war zone. When the German Government disavowed and apologized for the sinking of the *Arabic*, the British Navy had found means to cope with the submarine menace, and the hopes and boasts with which the campaign was inaugurated were completely bankrupt. According to the official British statement, the German submarines in the war zone during eight months of activity, to Oct. 14, sank 183 British merchant ships and 175 fishing vessels. For this insignificant result Germany paid an enormous price. The British Admiralty has made no definite announcement on the subject, but it is reported through uncensored channels that since the campaign began, the British fleet has been increased by 44 captured German submarines, while the total of Germany's losses exceeds 70. During the last three months of the year the activity of German submarines in the war zone about the British Isles diminished to sporadic raids.

The Sinking of the "Ancona" and the Crisis with Austria-Hungary. — The collapse of the campaign in northern waters diverted Teutonic submarine warfare to another theatre of operations. Early in October German submarines entered the Mediterranean in force, and to their extensive operations against the Allies' lines of transport to Gallipoli, Saloniki and Suez was joined a new campaign against merchant shipping by submarines under the Austrian flag, which had hitherto appeared

only in the Adriatic. In ruthless disregard of the principles of law and humanity of which the United States had exacted observance of Germany, the conduct of the Austrian campaign exhibited all the barbarities of its German original, and the slaughter of American citizens in its first notable achievement speedily precipitated an acute crisis in the relations between the United States and the Dual Monarchy.

On Nov. 7 the Italian liner *Ancona*, one day out from Messina for New York with over 400 passengers and a crew of about 170, was sunk off the coast of Tunis by a submarine flying the Austrian flag. The exact circumstances of the attack were obscured by conflicting versions emanating from Rome and Vienna, but the established facts left no doubt of a fresh outrage on American rights. The sinking of the vessel was preceded by a violent bombardment which created a panic on board; the ship was torpedoed while the decks were still crowded with terror-stricken passengers, and by gunfire and in the final sinking over 200 of those on board perished, among them nine of the 12 American passengers. In a circular memorandum of Nov. 14, based on the report of the captain and other survivors, the Italian Government declared that the submarine began the bombardment without any warning whatever, continued it after the vessel stopped, and shelled even the life boats in which the terrorized passengers were seeking refuge. The version of the Austro-Hungarian Admiralty, issued on the same day, was as follows:

> The submarine fired one shot in front of the *Ancona's* prow, whereupon the steamer fled at full speed, in accordance with the order issued by the Italian authorities, which instructs ship commanders to flee or to sink the submarine. The submarine pursued the steamer and continued firing, but the vessel stopped only after being hit several times.
>
> The submarine allowed forty-five minutes for the passengers and crew to abandon the steamer, on board of which panic reigned, but only a small number of boats were lowered, and these were occupied principally by the crew.
>
> A great number of boats, probably sufficient to save all the passengers, remained unoccupied.
>
> After a period of fifty minutes, as another steamer was approaching, the submarine submerged and torpedoed the *Ancona*, which sank after an additional forty-five minutes.
>
> If any of the passengers lost their lives this was due to the fault of the crew, because the steamer tried to escape after it had received orders to stop, and then the crew only saved themselves and not the passengers.
>
> Reports published in the foreign press that the submarine fired on the *Ancona's* lifeboats are mendacious inventions. When the steamer stopped the submarine ceased firing.

The Austrian statement, with its implied assumption of responsibility, dispelled an apprehension that the *Ancona* outrage might prove to be the act of a German submarine masquerading under Austrian colors. Immediately on its receipt the State Department transmitted the Italian memorandum to Ambassador Penfield at Vienna with instructions to demand of the Austro-Hungarian Government a detailed account of the sinking of the *Ancona* with specific information on certain vital points. Meanwhile the State Department collected all the information available through other channels, and after vainly waiting three weeks for the Austrian report, Secretary Lansing addressed to Vienna a demand for atonement for the slaughter of American citizens, the peremptory tone of which was significant of the mounting impatience of Administration and people with Teutonic assaults on American rights both on the high seas and within the borders of the United States (see *Neutrality, infra*).

The American note of Dec. 6 stated the ground of complaint as follows:

> Reliable information obtained from American and other survivors who were passengers on the steamship *Ancona* shows that on November 7 a submarine flying the Austro-Hungarian flag fired a solid shot toward the steamship; that thereupon the *Ancona* attempted to escape, but being overhauled by the submarine she stopped; that after a brief period and before the crew and passengers were all able to take to the boats the submarine fired a number of shells at the vessel and finally torpedoed and sank her while there were yet many persons on board; and that by gunfire and foundering of the vessel a large number of persons lost their lives or were seriously injured, among whom were citizens of the United States.

The principal declaration of the survivors, the note continued, was substantially confirmed by the admission in the public statement issued by the Austro-Hungarian Admiralty that "the *Ancona*, after being shelled, was torpedoed and sunk while persons were still on board." Although the Austro-Hungarian Government was fully advised, through the correspondence between the United States and Germany, of the attitude of the American Government as to the use of submarines in attacking merchant vessels and of the acquiescence of the ally of Austria-Hungary therein, "the commander of the submarine which sank the *Ancona* failed to put in a place of safety the crew and passengers of the vessel which they purposed to destroy."

> The Government of the United States considers that the commander violated the principles of international law and of humanity by shelling and torpedoing the *Ancona* before the persons on board had been put in a place of safety or given sufficient time to leave the vessel. The conduct of the commander can only be characterized as wanton slaughter of defenseless non-combatants, since at the time when the vessel was shelled and torpedoed she was not, it appears, resisting or attempting to escape; and no other reason is sufficient to excuse such an attack, not even the possibility of rescue. . . .
>
> As the good relations of the two countries must rest upon a common regard for law and humanity, the Government of the United States cannot be expected to do otherwise than to demand that the Imperial and Royal Government denounce the sinking of the *Ancona* as an illegal and indefensible act: that the officer who perpetrated the deed be punished; and that reparation by the payment of an indemnity be made for the citizens of the United States who were killed or injured by the attack on the vessel.
>
> The Government of the United States expects that the Austro-Hungarian Government, appreciating the gravity of the case, will accede to its demand promptly; and it rests this expectation on the belief that the Austro-Hungarian Government will not sanction or defend an act which is condemned by the world as inhumane and barbarous, which is abhorrent to all civilized nations, and which has caused the death of innocent American citizens.

Added to the smart of Dr. Dumba's enforced recall (see *Neutrality, infra*), the brusqueness and severity of the American note, with its implication of subordinacy to Germany, aroused intense resentment in the Dual Monarchy. The press construed it as an open insult, denounced its tone and content, and demanded a rebuke consistent with the honor and dignity of the nation. The Austro-Hungarian Admiralty, assuming the predominance over the Foreign Office familiar to German diplomacy, formally published on Dec. 14 its approval of the report of the submarine commander with the following remarkable defense of his course of action:

> It appears clearly from his report that his ship was in danger, indeed, in double danger, first from the fact that an enemy boat was approaching on a line that threatened to cut off his retreat, and the enemy ship and the *Ancona* could have established his radius of action, and could have set a torpedo boat flotilla on him, and, second, there was danger of the *Ancona* escaping, which, according to his instructions, was to be prevented in all circumstances. Hence the conduct of the commander, much as the loss of innocent lives must be regretted and deplored, cannot be disapproved. On the contrary, if he had departed without destroying the *Ancona* it would have been a failure to do his duty, since the *Ancona* could have notified other ships of his whereabouts. The loss of American lives is regrettable, as well as that Americans used a vessel belonging to a nation at war with Austria-Hungary.

Under these influences was composed the Austro-Hungarian note of Dec. 15. "Preliminary to a thorough, meritorious treatment," the Austro-Hungarian Government observed that the sharpness of the condemnation meted out to the submarine commander and the firmness of the demands of the American note "might well have warranted the expectation that the Government of the United States should precisely specify the actual circumstances of the affair on which it bases its case." Instead, the presentation of the facts in the American note left room for many doubts, and even assuming its entire correctness and applying the most rigorous legal conception, it in no way sufficiently warranted attaching blame to the submarine commander or to his Government. Further, the American Government failed to designate the witnesses to which it apparently attributed a higher degree of credibility than to the commander,

nor did it offer any precise information as to the loss of American lives. However, since the United States Government positively affirmed that American citizens had perished in the sinking of the *Ancona*, the Austro-Hungarian Government was "in principle ready to enter into an exchange of views in the affair with the Government of the United States."

It must, however, in the first place, raise the question why that Government failed to give juridical reasons for the demands set forth in its note with reference to the special circumstances of the incriminating events upon which it itself lays stress, and why, in lieu thereof, it referred to an exchange of correspondence which it has conducted with another Government in other cases. The Imperial and Royal Government is the less able to follow the Washington Cabinet on this unusual path, since it by no means possesses authentic knowledge of all of the pertinent correspondence of the Government of the United States, nor is it of the opinion that such knowledge might be sufficient for it in the present case, which, in so far as it is informed, is in essential points of another nature than the case or cases to which the Government of the United States seems to allude. The Imperial and Royal Government may therefore leave it to the Washington Cabinet to formulate the particular points of law against which the commanding officer of the submarine is alleged to have offended on the occasion of the sinking of the *Ancona*.

Moreover, if the reference of the American Government to the outcome of the correspondence with Berlin was intended to imply the existence of a precedent of whatever nature, the Austro-Hungarian Government was obliged to declare that as a matter of course it reserved to itself full freedom of maintaining its own legal views in discussing the *Ancona* case.

The flimsy arguments put forward by Baron Burian in evasion of the specific demands of the United States created a most unfavorable impression in this country. Indeed, the Austro-Hungarian note escaped giving intolerable offense only by reason of the careful avoidance of any suggestion of defiance. Taking such evidences of a conciliatory spirit at their face value, the Administration was disposed to give the Dual Monarchy one more chance to avert the impending rupture of diplomatic relations, and Secretary Lansing's note of Dec. 19 renewed the demands of the United States in a form much less peremptory and irritating than its predecessor. It firmly rejected, however, the temporizing invitation of the Austro-Hungarian Government to an exchange of views on principles of record, and met the request for further authentication of the grounds of complaint by recalling the admission of the Austro-Hungarian Admiralty, in the report transmitted by the Austro-Hungarian chargé d'affaires at Washington on Nov. 15, that the *Ancona* "was torpedoed after her engines had been stopped and when passengers were still on board." This admission alone, the American Government held, was sufficient to convict the submarine commander of wilful violation of the legal and humane principles of maritime warfare. Hence, the United States Government found no course open to it but to hold the Austro-Hungarian Government responsible for the act of its naval commander and to renew its "definite but respectful demands for redress."

From this final presentation of the issue there was no escape, and the Austro-Hungarian Government surrendered in a note of Dec. 29. Affirming at the outset its thorough agreement with the American Government "that even in war the sacred demands of humanity must be complied with," the Austro-Hungarian Government was also able substantially to concur in the principle "that private ships, in so far as they do not flee or offer resistance, may not be destroyed without the persons aboard being brought into safety." Further, it was willing, although the American note omitted to answer all the legitimate questions submitted to the United States Government, to communicate the results of an investigation, recently completed, of the circumstances of the sinking of the *Ancona*. On the basis of this report, which merely elaborated the details of the Admiralty statement of Nov. 14, the Austro-Hungarian Government attributed the greatest sacrifice of life to the unseamanlike conduct of the crew. Had the crew not abandoned the passengers in a manner contrary to duty, the Austro-Hungarian Government

held, the submarine commander would have accomplished his purpose of giving all persons on board an opportunity to take to the boats, in furtherance of which he first granted 45 minutes after the vessel stopped and then torpedoed the ship in such a manner that it would remain above water the longest possible time.

Notwithstanding all appreciation of this procedure of their commander aiming at the rescue of the crew and passengers, the Imperial and Royal naval authorities came to the conclusion that he had failed to take into sufficient consideration the panic which occurred amongst the passengers rendering the embarkation more difficult and the spirit of the regulation that Imperial and Royal naval officers should not refuse help to anyone in distress, not even to the enemy. Hence the officer has been punished in accordance with the rules in force in this matter for exceeding his instructions.

In the face of this state of affairs the Austro-Hungarian Government did not hesitate to draw the corresponding conclusions respecting the indemnification of American citizens affected by the sinking of the prize. In assuming that the American Government was in a position and disposed to furnish proofs of the right of indemnity, the Austro-Hungarian Government pointed out that it could not be held liable for damages resulting from the justified bombardment of the fleeing ship or from the faulty lowering or the capsizing of lowered lifeboats.

However, should the more precise circumstances under which the American citizens were injured be unknown to the Government of the United States, due to a lack of the proper material evidence, the Imperial and Royal Government in consideration of the humanely deeply deplorable incident and guided by the desire of again manifesting to the Government of the United States its friendly sentiments, would be readily willing to overlook this gap in the evidence and to extend the indemnity also to those injuries the direct cause of which could not be ascertained.

The Austro-Hungarian note came as a complete surprise. During the week following the dispatch of the American note of Dec. 19, two large passenger steamers were sunk without warning in the Mediterranean, the Japanese liner *Yasaka Maru* on Dec. 21, and the French steamer *Ville de la Ciotat* on the 24th. At the same time, all the rumors which came out of Vienna indicated that the most to be expected of the Austro-Hungarian Government was an offer to submit the *Ancona* question to arbitration. A press summary of the note reached the United States on Dec. 30, and the full text as telegraphed from Vienna was published in the morning papers of New Year's Day. American opinion generally accepted the surrender as complete, though scarcely handsome, and was ready to attribute to the Administration a diplomatic victory more substantial than that obtained in the case of the *Arabic*. It appeared, moreover, that a settlement with Austria-Hungary could scarcely fail to have a favorable and possibly decisive influence on the negotiations with Germany over disavowal and reparation for the sinking of the *Lusitania*. But the evening papers of New Year's Day published the report of the sinking of the Peninsular & Oriental liner *Persia* off the coast of Crete on Dec. 30 with a loss of over 200 lives, among them Robert N. McNeely, American consul at Aden. The *Persia* sank in five minutes after being struck, and although no submarine was seen, passengers deposed to having observed the wake of a torpedo. Thus, at the opening of the new year, American relations with the Teutonic Empires were again plunged into critical uncertainty.

NEUTRALITY

Domestic Problems of Neutrality.—From transgressions on neutral American rights by the European belligerents we turn finally to the domestic problems of neutrality, and especially to those involved in the tremendous and sustained campaign conducted in the United States on behalf of the Germanic alliance, the most remarkable example in history of mission work carried on in a neutral country in the interest of a belligerent. Pro-German propaganda in its earliest phase of persuasion and

apology appeared before hostilities were well begun, and in the early days of the war Dr. Bernhard Dernburg, sometime Colonial Minister in the Imperial German Government, arrived as a special emissary of Berlin to instruct the American people on the aggressive responsibility of Great Britain and her allies, the righteousness of the German cause, and the superiority of German *Kultur*. This campaign of education, conducted by Dr. Dernburg and other German and German-American leaders with the utmost vigor on the platform, in the press and through the mails, failed utterly to change American opinion on the origin and issues of the war or to lessen the antipathy inspired by the invasion of Belgium and its attendant horrors. Sometimes unscrupulous, often insulting, and always lacking in imagination, the propaganda alienated more sympathy than it attracted, and it was not long before the futile efforts to convert a sentiment generally strongly adverse to the German cause were overshadowed by a campaign of attack on American neutrality.

In a letter addressed to the Secretary of State on Jan. 8, Senator Stone (Mo.), chairman of the Senate Committee on Foreign Relations, set forth in 20 categories the grounds of complaint alleged by German sympathizers in letters and in the press as evidence of partiality shown by the United States Government to Great Britain, France and Russia as against Germany and Austria. These complaints charged the Government with direct unfairness to Germany in a censorship of wireless, the internment of German war vessels, and the neutrality rules established for the use of the Panama Canal; alleged that the Government had submitted without protest to infringement of international law and American rights by Great Britain in putting into practice restraints on commerce and in the treatment of American citizens; and emphasized particularly the sale of munitions of war to the Allies. Mr. Bryan's reply of January 20, dealing with Senator Stone's categories *seriatim*, was a complete definition and defense of the Government's interpretation of its rights and duties as a neutral, and it showed the German complaints to be either unfounded in fact or groundless in international law. The document concluded with this reply to the final charge of a general unfriendly attitude of the Government toward Germany and Austria:

> If any American citizens, partisans of Germany and Austria-Hungary, feel that this Administration is acting in a way injurious to the cause of those countries, this feeling results from the fact that on the high seas the German and Austro-Hungarian naval power is thus far inferior to the British. It is the business of a belligerent operating on the high seas, not the duty of a neutral, to prevent contraband from reaching an enemy. Those in this country who sympathize with Germany and Austria-Hungary appear to assume that some obligation rests upon this Government in the performance of its neutral duty to prevent all trade in contraband, and thus to equalize the difference due to the relative naval strength of the belligerents. No such obligation exists; it would be an unneutral act, an act of partiality on the part of this Government, to adopt such a policy if the Executive had the power to do so. If Germany and Austria-Hungary cannot import contraband from this country it is not, because of that fact, the duty of the United States to close its markets to the Allies. The markets of this country are open upon equal terms to all the world, to every nation, belligerent or neutral.

The Problem of Belligerent Warships.—Before the control of the seas passed definitively to Great Britain, the chief problem in the strict observance of neutral duties enjoined in the President's proclamation of neutrality lay in the impartial enforcement of the prohibitions against the use of the territory of the United States as a base of operations for the naval forces of the European belligerents. The Government acted vigorously in the early days of the war to prevent the use of wireless equipment in American territory to transmit military information to belligerent warships on the high seas (*A. Y. B.*, 1914, p. 41). At the same time it provided against the unneutral shipment of coal and provisions from American ports for transfer to belligerent vessels at sea by enforcing a rigid scrutiny of the clearance papers of all ships and by establishing naval

patrols in all the principal harbors to prevent the departure of uncleared vessels. Except in a few cases of clearance under false manifests, these precautionary measures were adequate and effective.

They were not enforced without a strong protest from the German Government, which held an interpretation of neutral duties which denied free clearance to ships destined to supply German warships with coal to be "untenable in international law." In a memorandum transmitted by Count von Bernstorff on Dec. 15, 1914, it set forth its protest as follows:

> Our enemies draw from the United States contraband of war, especially arms, worth several billions of marks. This in itself they are authorized to do. But if the United States will prevent our warships occasionally drawing supplies from its ports, a great injustice grows out of the authorization, for it would amount to an unequal treatment of the belligerents and constitute a breach of the generally accepted rules of neutrality to Germany's detriment.

Mr. Bryan replied in a note of Dec. 24 that no merchant vessel had been refused clearance on these grounds, although certain temporary detentions had been found necessary for the purpose of investigating the *bona fides* of the alleged destinations of particular vessels.

It appeared, however, that fraudulent evasion of precautionary regulations could not be successfully prosecuted as a violation of neutrality under the existing statutes. Late in February the British consul-general at New York submitted to the Federal authorities evidence that in September, 1914, the Hamburg-American Steamship Co. had endeavored to dispatch two Norwegian and two American steamships from Atlantic ports with provisions and coal for the German raiders *Kaiser Wilhelm der Grosse* and *Karlsruhe*. On March 1 a Federal grand jury found two indictments against the Hamburg-American Co., Dr. Karl Buenz, its managing director, and four other officials and employees, on charges of conspiracy to defraud the United States Government by obtaining clearance papers for ships through false representations as to the nature and destination of their cargoes. The indictments were found under the customs statutes and contained no reference to breaches of the neutrality laws, which the Government discovered to be out of date and inadequate to meet the conditions of the case.

At the instance of the Departments of Justice and State, the Sixty-third Congress passed in the last hours of the final session a joint resolution supplementing the neutrality statutes, "in order to prevent the neutrality of the United States from being violated by the use of its territory, its ports, or its territorial waters as the base of operations for the armed forces of a belligerent." The resolution, approved by the President on March 4, provides:

> That . . . the President be, and he is hereby, authorized and empowered to direct the collectors of customs under the jurisdiction of the United States to withhold clearance from any vessel, American or foreign, which he has reasonable cause to believe to be about to carry fuel, arms, ammunition, men, or supplies to any warship, or tender, or supply ship of a belligerent nation in violation of the obligations of the United States as a neutral nation. In case any such vessel shall depart or attempt to depart from the jurisdiction of the United States without clearance for any of the purposes above set forth, the owner or master or person or persons having charge or command of such vessel shall severally be liable to a fine of not less than $2,000 nor more than $10,000, or to imprisonment not to exceed two years, or both, and, in addition, such vessel shall be forfeited to the United States.
>
> That the President of the United States be, and he is hereby, authorized and empowered to employ such part of the land or naval forces of the United States as shall be necessary to carry out the purposes of this resolution.

The Government had early occasion to exercise these new powers. On March 21, the Hamburg-American steamer *Odenwald*, attempting to leave the port of San Juan, Porto Rico, without clearance papers, was stopped by shots across her bows from Morro Castle. The *Odenwald* was under strong suspicion of preparing to engage in unneutral service. She refused to permit an inspection of her cargo by the port authorities, and the consequent denial of clearance papers was accompanied by a warning

of the penalty for attempting to escape uncleared. The Government accordingly filed a libel action against the vessel at San Juan on March 27.

The extent of the German organization for naval supply operations was partially revealed in the trial of the indicted Hamburg-American officials at New York late in November. One of the indictments found under the customs statutes charged conspiracy to defraud the United States Government "in and by causing collectors of customs by means of false statements to make, record and transmit untrue and inaccurate records"; the other charged conspiracy to defraud by obtaining clearance papers for vessels by means of false manifests. The defendants conceded practically all the acts charged by the Government and rested their case on the claim that none of them constituted a crime under the statutes of the United States. Some of the admissions of the defense were highly interesting. They showed that as early as Aug. 3, 1914, before Great Britain declared war on Germany, a message from Berlin transformed the German merchant marine organizations in this country virtually into a division of the German War Office, and that the port of New York was made the main naval base for German commerce raiders over half the globe. It was conceded further that the defendants were instrumental in the dispatch under false manifests or the loading of 12 ships at a total expense of $1,419,394. Some of these vessels were captured by British cruisers; others returned to port to escape capture or because the warships they were to serve had been sunk or captured; still others were detained in American ports under the precautionary measures established by the Government; while only one of the vessels, carrying a cargo of coal and provisions valued at about $20,000, accomplished its mission. Much of the evidence introduced by the Government tended to show that Capt. Karl Boy-Ed, the German naval attaché at Washington, handled the bulk of the funds transmitted for this purpose by the German Government and was in effect the directing head of the entire enterprise. The defendants contended that their activities were entirely legitimate and that the offenses charged were trivial, but the jury took a different view and on Dec. 2 found all the defendants guilty. On Dec. 4 Dr. Buenz and two of his employees were sentenced to 18 months' imprisonment in the Federal penitentiary at Atlanta, the fourth defendant (the fifth died shortly after indictment) to imprisonment for a year and a day, and the Hamburg-American Steamship Co. to pay a fine of one dollar.

Passport Frauds.—Another annoying phase of German activity was the fraudulent use of American passports to facilitate the return of reservists to Germany. Early in the year the Government discovered indications of a systematic plan to obtain passports for this purpose through fraud, but prompt convictions in two cases effectually discouraged the conspirators before the plot had any important success. The first case involved four German reservists bearing passports issued to American citizens who were taken from a Norwegian steamer leaving New York on Jan. 2. The passports were traced to Carl Ruroede, a steamship agent of Brooklyn, who pleaded guilty to a charge of conspiracy to defraud the Government and was sentenced to three years' imprisonment on March 8. In the second case the confession of one of the principals charged Captain Boy-Ed with being the instigator of the fraud. Richard P. Stegler, a German reservist arrested on Feb. 24 on a charge of conspiracy to obtain an American passport by impersonating an American citizen, declared that Captain Boy-Ed had persuaded him to go to England as a spy in the guise of a commercial agent for American firms, and had suggested the means and supplied the money by which he had obtained the birth certificate of an American citizen as a preliminary to securing a passport. Captain Boy-Ed issued an emphatic denial of Stegler's charges. Stegler was sentenced on March 19 to 60 days' imprisonment, and his two accomplices in the transfer of the birth certificate to ten months.

The Campaign for an Embargo on Arms.—As an overt campaign of defense and persuasion the pro-German propaganda ended with the sinking of the *Lusitania* early in May. The horror and disgust inspired by that barbarous act extinguished the tolerance with which the American people had hitherto endured German instruction and complaint, and it responded to Dr. Dernburg's attempted defense of the massacre with an outburst of exasperation which permanently silenced that protagonist of *Kultur* and resulted, with some official suggestion, in his departure for Germany on June 12. Thereafter German effort pursued by different methods its supreme objective of the prevention of exports of munitions of war to the Allies.

From the beginning an embargo on the exportation of arms and ammunition was the core and center of the German propaganda. To redress by this means their adverse fortunes of war on the sea, the Central Powers and their American adherents devoted all the resources of argument, organization and diplomacy. The German propagandists appealed to humane sentiments against the prolongation of the war; they predicated on the one-sided nature of the traffic an impeachment of American neutrality; they sought to stimulate and capitalize to the advantage of the Teutonic alliance the resentment against British restraints on American commerce. By every means in their power they strove to create a public sentiment which would force Congress to lay an embargo on arms and munitions of war, but the net result of their efforts to influence legislation was a flood of memorials from German sympathizers and the introduction of bills by Senator Hitchcock of Nebraska, Senator Works of California, and Representatives Bartholdt of Missouri, Lobeck of Nebraska, and Vollmer and Towner of Iowa, none of which made any progress.

In this campaign to force the hand of the Administration by Congressional action subversive of the obligations of neutrality, the propagandists set utterly at naught the neutral rights and duties of the United States under international law as defined in Mr. Lansing's statement of Oct. 15, 1914 (*A. Y. B.*, 1914, p. 42) and in Secretary Bryan's letter to Senator Stone. Undismayed by official demolition of the German case, the German sympathizers in alliance with Irish-Americans of Fenian traditions launched, at a meeting in Washington on Jan. 30, a concerted movement to bring American neutrality and the pro-German propaganda into domestic politics. The meeting was under the chairmanship of Representative Richard Bartholdt, and his coadjutors comprised four other Representatives, Barchfeld and Porter of Pennsylvania, Vollmer of Iowa, and Lobeck of Nebraska; representatives of German-American and Irish-American societies throughout the country; prominent German-Americans and Irish-Americans invited as individuals, a privilege which Prof. Kuno Francke of Harvard declined to accept on patriotic grounds; and a residuum of unhyphenated citizens partisans of the German cause. The result of their deliberations was the foundation of the American Independence Union, designed to establish "genuine American neutrality and to uphold it free from commercial, financial and political subservience to foreign powers." The resolution of organization set forth its objects and purposes as follows:

1. In order to insure the possession of an independent news service, we favor an American cable controlled by the Government of the United States.
2. We demand a free and open sea for the commerce of the United States and unrestricted traffic in non-contraband goods as defined by law.
3. We favor as a strictly American policy the immediate enactment of legislation prohibiting the export of arms, ammunition and munitions of war.
4. We favor the establishment of an American merchant marine, and,
5. We pledge ourselves individually and collectively to support only such candidates for public office, irrespective of party, who will place American interests above those of any other country and who will aid in eliminating all undue foreign influence from official life.

In personnel and purpose this organization was typical of several others which sprang into existence

during the first half of the year: the American Truth Society, Friends of Truth, Friends of Peace, Organization of American Women for Strict Neutrality, American Peaceful Embargo Society, Labor's National Peace Council. All of them disclaimed connection with German propaganda, avowed high principles of disinterested patriotism, and devoted all their energies to the promotion of the German cause, the last named by activities which brought its officers under criminal prosecution (see *infra*).

Diplomatic Protests against the Export of Munitions. — The domestic propaganda against the export of munitions to the Allies was seconded by diplomatic protests from Berlin and Vienna. Notwithstanding a formal acknowledgment of the legal correctness of the position of the United States in the memorandum of Dec. 15 (see *supra*), a German protest transmitted by Count von Bernstorff on April 4 was a virtual impeachment of American neutrality, offensive in both form and content, and it drew from Secretary Bryan on April 24 a courteous but effective rebuke. This correspondence is reviewed in the preceding section and need not be repeated here. Probably because of the intervention of the submarine issue at this point, the German Government abandoned the controversy, except for recurrent intimations in notes dealing primarily with other questions, and relegated the formal presentation of the case to Vienna, which submitted an independent protest in a note of June 29.

The meaning and essence of neutrality, the note held, were in no way exhaustively dealt with in the fragmentary provisions of the Hague conventions. Although the wording of certain parts afforded the American Government a formal pretext for the toleration of the traffic in munitions, "the detailed privileges conceded to neutral states in the sense of the preamble . . . are limited by the requirements of neutrality which conform to the universally recognized principles of international law." By none of the criteria laid down by authorities on international law, the note declared, was the traffic in munitions as carried on by the United States "to be brought into accord with the demands of neutrality."

> The question now before us is surely not whether American industries which are engaged in the manufacture of war material should be protected from loss in the export trade that was theirs in time of peace. Rather has that industry soared to unimagined heights. In order to turn out the huge quantities of arms, ammunition, and other war material of every description ordered in the past months by Great Britain and her allies from the United States, not only the full capacity of the existing plants, but also their transformation and enlargement and the creation of new large plants, as well as a flocking of workmen of all trades into that branch of industry, in brief, far-reaching changes of economic life encompassing the whole country, became necessary. From no quarter, then, can there come any question of the right of the American Government to prohibit, through the issuance of an embargo, that enormous exportation of war implements that is openly carried on and, besides, is commonly known to be availed of by only one of the parties to the war. If the Federal Government would exercise that power it possesses, it could not lay itself open to blame if, in order to keep within the requirements of the law of the land, it adopted the course of enacting a law. For while the principle obtains that a neutral state may not alter the rules in force within its province concerning its attitude toward belligerents while war is being waged, yet this principle, as clearly appears from the preamble to the Thirteenth Hague Convention, suffers an exception in the case where experience has shown the necessity thereof for the protection of its rights.

This case, the note contended, was already established for the American Government by the fact that the Teutonic Empires were cut off from all commercial intercourse with the United States without the legal prerequisite of a properly constituted blockade. In reply to the possible objection that American industry was willing but unable because of the war situation to furnish merchandise to Austria-Hungary and Germany as well as to the Allies, the Austro-Hungarian Government pointed out that the American Government would undoubtedly find it amply sufficient to remedy this situation to threaten the Allies with an embargo on the exportation of foodstuffs and raw materials if legitimate commerce in these articles with the Central Powers was not allowed.

In deference to the courteous tone of the Austrian protest, Secretary Lansing's reply of Aug. 12 entered into a full exposition of the rights and policy of the United States. The note acknowledged with satisfaction the recognition of the intention of the American Government to "maintain the strictest neutrality and to conform to the letter of the provisions of international treaties," but expressed surprise to find the Austro-Hungarian Government implying that

> the observance of the strict principles of the law under the conditions which have developed in the present war is insufficient, and asserting that this Government should go beyond the long-recognized rules governing such traffic by neutrals and adopt measures to maintain an attitude of strict parity with respect to both belligerent parties.
>
> To this assertion of an obligation to change or modify the rules of international usage on account of special conditions, the Government of the United States cannot accede. The recognition of an obligation of this sort, unknown to the international practice of the past, would impose upon every neutral nation a duty to sit in judgment on the progress of a war and to restrict its commercial intercourse with a belligerent whose naval successes prevented the neutral from trade with the enemy. The contention of the Imperial and Royal Government appears to be that the advantages gained to a belligerent by its superiority on the sea should be equalized by the neutral powers by the establishment of a system of non-intercourse with the victor. . . .
>
> Manifestly the idea of strict neutrality now advanced by the Imperial and Royal Government would involve a neutral nation in a mass of perplexities which could obscure the whole field of international obligation, produce economic confusion and deprive all commerce and industry of legitimate fields of enterprise, already heavily burdened by the unavoidable restriction of war.

Prior to the present war, the note pointed out, both Austria-Hungary and Germany sold their great surplus production of arms and ammunition throughout the world and especially to belligerents, and neither of them ever suggested or adopted the principle now advocated.

In addition to the question of principle, Mr. Lansing continued, there was a very practical and substantial reason why the United States had from its foundation advocated unrestricted trade in arms and military supplies. Desiring to remain at peace with all nations and to avoid any appearance of menacing such peace by the threat of its armies and navies, the United States had never adopted the policy of maintaining in peace times a large military establishment or large reserve supplies of arms and ammunition, but had "always depended upon the right and power to purchase arms and ammunition from neutral nations in case of foreign attack." The right which it claimed for itself could not be denied to others.

> The general adoption by the nations of the world of the theory that neutral powers ought to prohibit the sale of arms and ammunition to belligerents would compel every nation to have in readiness at all times sufficient munitions of war to meet any emergency which might arise, and to erect and maintain establishments for the manufacture of arms and ammunition sufficient to supply the needs of its military and naval forces throughout the progress of a war. Manifestly the application of this theory would result in every nation becoming an armed camp, ready to resist aggression and tempted to employ force in asserting its rights rather than appeal to reason and justice for the settlement of international disputes.
>
> Perceiving, as it does, that the adoption of the principle that it is the duty of a neutral to prohibit the sale of arms and ammunition to a belligerent during the progress of a war would inevitably give the advantage to the belligerent which had encouraged the manufacture of munitions in time of peace, and which had laid in vast stores of arms and ammunition in anticipation of war, the Government of the United States is convinced that the adoption of the theory would force militarism on the world and work against the universal peace which is the desire and purpose of all nations with one another.

In conclusion, the American note took cognizance of the contentions urged by the Austro-Hungarian Government in support of its protest. As to the assertion that the exportation of arms and ammunition contravenes the Hague Convention, Mr. Lansing pointed out that one of the rules laid down by the convention explicitly declared that a neutral is not bound to prohibit the exportation of contraband of war, and quoted the preamble on the sole permissible ground of change in time of war:

> These rules should not, in principle, be altered, in the course of a war, by

a neutral power, except in a case where experience has shown the necessity for such change for the protection of the rights of that power.

The right and duty to determine when this necessity exists, he held, rests with the neutral, not with a belligerent, who would invite a "just rebuke" in entering a complaint in the nature of an admonition to a neutral of the steps necessary to protect its own rights.

So far as the United States Government was concerned, this exposition of the American case permanently closed the discussion. The Austro-Hungarian Government, however, entered a replication in a note of Sept. 24, which restated its position at length and sought to remove certain alleged misconceptions of the grounds of protest apparent in the American note. The Administration has not considered it necessary to reply to this communication, which derives its chief interest from a disavowal of intention to advocate a principle of "equalization."

The Criminal Campaign.—Failing to stop the export of munitions to the Allies by persuasion, legislation or diplomacy, German effort turned as a last resort to direct action against the sources of supply and the means of transport to Europe. The last half of the year, in which this criminal campaign against American industries was chiefly operative, was ushered in by an attempt on the life of J. Pierpont Morgan by an insane instructor in German in Cornell University known as Frank Holt, later identified as Erich Muenter, a former instructor in Harvard University who disappeared after indictment for the murder of his wife in 1906. As a preliminary to the attack on the head of the banking firm acting as chief fiscal and purchasing agents of the British and French Governments, Holt placed a bomb in the Capitol in Washington on July 2 which wrecked the Senate reception room. On the morning of the 3d he sought Mr. Morgan at his country home at Glen Cove, Long Island, for the purpose of forcing from him an agreement to use his influence to have an embargo put on shipments of ammunition. In attempting to disarm his assailant, Mr. Morgan was shot twice, neither bullet doing any permanent injury. Holt committed suicide in his cell in the Nassau County jail at Mineola on the 6th.

The attack on Mr. Morgan, fortunately the sole attempt at direct assassination, exemplified the workings of propaganda on a disordered mind. In its effective manifestations the criminal campaign displayed a high order of prevision and resource. Beginning with an incendiary fire causing $1,500,000 loss at the works of the John A. Roebling's Sons Co. at Trenton, N. J., on Jan. 18, disasters to industrial plants engaged in the manufacture of munitions were reported with increasing frequency throughout the year. Within 24 hours on Nov. 10-11, for example, fire attacked the Roebling works a second time with damage estimated at $1,000,000, destroyed a shop of the Bethlehem Steel Co. with equal loss, and caused smaller damages at the plants of the Midvale Steel & Ordnance Co. at Midvale, O., and the Baldwin Locomotive Works at Eddystone, Pa. Among numerous disasters to ammunition factories, an explosion at one of the plants of the du Pont Powder Co. near Wilmington, Del., on Nov. 30 caused the loss of 31 lives, and on Dec. 9 the du Pont factory town of Hopewell, near Richmond, Va., was practically destroyed by fire. Equally numerous were cases of attempted destruction of ocean steamers. Bombs were discovered on several vessels, and on many more fires attributed to the same agency broke out in port or at sea. So visited were the *Touraine* of the French Line in March, the *Minnehaha* of the Atlantic Transport Line in July, the *Sant' Anna* of the Italian Line in September, and the *Rochambeau* of the French Line in November, to mention only the disasters to large passenger steamers in the Atlantic.

So far as the destruction of munitions plants and the burning of ships and cargoes could be attributed with any shadow of probability to accident or natural causes, that allowance was made. But in the last quarter of the year the conviction has

been forced home that disasters so numerous and widespread could be neither the result of coincidence nor the work of a few scattered fanatics, but must be the product of organized warfare on the munitions industry. Hitherto, however, the conspirators have operated with comparative impunity. The Government has disclosed no evidence of a directing agency, and arrests have been made in very few cases, the most important being those of Charles C. Crowley, apprehended with several alleged accomplices at San Francisco in November on charges of criminal activities against shipping and munitions plants on the Pacific coast; and of Robert Fay, who claims to be an officer in the German Army, arrested with another German near Weehawken, N. J., on Oct. 24, on charges of conspiracy to blow up vessels sailing from American ports with cargoes of munitions for the Allies. Three other alleged conspirators with Fay were taken into custody later. Fay was found to have large quantities of explosives in his possession which he admitted were for the purpose of manufacturing time bombs to be attached as mines to munitions ships. In a voluntary statement made on Oct. 25, Fay confessed that he had been taken from active service especially for this work, that he had been sent to the United States under instructions from the German Secret Service, and that he had reported his mission to Capt. Karl Boy-Ed and Capt. Franz von Papen, the German naval and military attachés at Washington. On Nov. 8 a Federal grand jury in New York found indictments against Fay and the other defendants, charging conspiracy to destroy vessels to the detriment of the owners of the ships and cargoes and of the underwriters of insurance thereon. Five other indictments were found on Dec. 6, intended to cover all possible phases of the offenses alleged, the additional charges including conspiracy to commit assault and murder.

The third and last of the principal manifestations of the criminal campaign has been an effort to foment strikes among seamen and workers in munitions plants. In June Andrew Furuseth, president of the International Seamen's Union of America, declared that a plan was on foot, backed apparently with unlimited funds, to promote a world's strike of seamen and thus immobilize all ocean shipping. On Aug. 17 Samuel Gompers issued a statement that his aid in foreign tampering with American labor had been solicited for months, and the executive committee of the American Federation of Labor reported officially in November that attempts had been made unsuccessfully to corrupt a number of labor leaders. Beginning with a strike on a new munitions factory at Bridgeport, Conn., in July, an epidemic of strikes swept over the East, especially among machinists in munitions plants. In four months 102 distinct strikes and six lockouts of machinists were recorded, and Bridgeport alone reported 55 strikes in various trades in a space of ten weeks (see also XVI, *Labor*). Even more certainly than in the case of incendiary and bomb conspiracies, the labor troubles of munitions makers exceeded the probability of coincidence and chance.

The labor conspiracy the Government claims to have traced to a definite source. Early in December a Federal grand jury in New York began an investigation of the activities of Labor's National Peace Council, an organization formed late in June by the promoters of a so-called "peace meeting" of a very Teutonic cast addressed by Mr. Bryan in New York on June 19. On Dec. 28 an indictment was found under the Sherman Act against Representative Frank Buchanan of Illinois, first president of Labor's National Peace Council; Jacob C. Taylor, his successor in that office; H. Robert Fowler, a former Representative from Illinois, its general counsel; Frank S. Monnett, former attorney-general of Ohio, a chairman of committee; Henry B. Martin, secretary; Henry Schulteis, a member; David Lamar, the so-called "wolf of Wall Street"; and Franz Rintelen, a captain in the German navy alleged to be a close friend of the Kaiser and now imprisoned in London as a spy. These men, the indictment charges, conspired to restrain the for-

eign commerce of the United States in war materials by fomenting by propaganda and bribery strikes among the workers in munitions plants. A fund of $500,000 for this purpose is alleged to have been disbursed through the other seven by Rintelen, who is said also to have promoted a revolution in Mexico under General Huerta.

The Dismissal of Dumba, Boy-Ed and von Papen.—The extent to which the German propaganda in its diverse phases derived encouragement and support from official sources has been a question fertile of rumor and conjecture. The New York *World*, for example, published on Aug. 15 and following days a mass of correspondence and other documents emanating from Count von Bernstorff, the German Ambassador, Capt. Franz von Papen, the German military attaché at Washington, Dr. Heinrich F. Albert, the chief financial agent of the German Government in this country, and others, on which it predicated the following charges:

That they financed and subsidized publications licensed by the laws of the United States as American publications.

That these German officials and agents secretly worked to fabricate sentiment in this country through the press, lecture platforms, moving pictures and the organization of so-called "peace societies" favorable to its cause.

That German officials and their agents had a hand in the promotion of strikes in munition and other industrial plants in the United States.

That while protesting against the shipment of arms to the Allied Governments with which it is at war Germany was planning and financing plants to manufacture arms and secure supplies of the same character for its own use.

That while promoting a nation-wide agitation among the citizens of the United States designed to permit the importation of German wares into America the German Government was actually conspiring to withhold such shipments in order to intensify the feeling in this country against the British blockade of German ports.

While admitting the authenticity of the documents, Dr. Albert took occasion to repudiate, in a long statement of Aug. 19, the deductions drawn by the *World*, denying particularly the existence of any basis for the assertion or insinuation that any one connected with the German Government had been concerned "in fomenting or encouraging strikes in factories manufacturing war materials." A fortnight later, however, the complicity of Teutonic officials in these activities was demonstrated in a spectacular manner. On Aug. 30 the British authorities detained at Falmouth James F. J. Archibald, an American newspaper correspondent of German sympathies on his way to Germany, and took possession of some 34 documents of a more or less official character entrusted to him for delivery in Berlin and Vienna. One of these documents was the following letter from Dr. Constantin Theodor Dumba, the Austro-Hungarian Ambassador, to Baron Burian, the Austro-Hungarian Foreign Minister:

Yesterday evening Consul General von Nuber received the inclosed *aide memoire* from the chief editor of the locally known paper, *Szabadsag*, after a previous conference with him and in pursuance of his proposals to arrange for strikes in the Bethlehem Schwab steel and munitions war factory, and also in the Middle West.

Dr. Archibald, who is well known to your Lordship, leaves to-day at 12 o'clock on board the *Rotterdam* for Berlin and Vienna. I take this rare and safe opportunity to warmly recommend the proposal to your Lordship's favorable consideration.

It is my impression that we can disorganize and hold up for months, if not entirely prevent, the manufacture of munitions in Bethlehem and the Middle West, which, in the opinion of the German Military Attaché, is of great importance and amply outweighs the expenditure of money involved.

But even if strikes do not come off, it is probable that we should extort, under the pressure of the crisis, more favorable conditions of labor for our poor, down-trodden fellow-countrymen. In Bethlehem these white slaves are now working for twelve hours a day and seven days a week. All weak persons succumb and become consumptives. So far as German workmen are found among the skilled hands, a means of leaving will be provided for them. Besides this, a private German registry office has been established, which provides employment for persons who have voluntarily given up their places, and is already working well. They will also join, and the widest support is assured us.

I beg your Excellency to be so good as to inform me with reference to this letter by wireless telegraphy, replying whether you agree.

Dr. Dumba readily admitted the plan and defended its legitimacy as a

"means of preventing the making and shipping of war materials to our enemies." The Government, however, took a different view, and requested Dr. Dumba's recall in a note dispatched to Vienna on Sept. 8 on the following grounds:

> By reason of the admitted purpose and intent of Mr. Dumba to conspire to cripple legitimate industries of the people of the United States and to interrupt their legitimate trade and by reason of the flagrant violation of diplomatic propriety in employing an American citizen protected by an American passport as a secret bearer of official dispatches through the lines of the enemy of Austria-Hungary, . . . Mr. Dumba is no longer acceptable to the Government of the United States as the Ambassador of his Imperial Majesty at Washington.

Dr. Dumba sought to be permitted to return to Vienna on leave of absence, but the State Department insisted on a formal recall, which was finally forthcoming on Sept. 28. Dr. Dumba sailed from New York on Oct. 5, under a safe conduct granted by the British Government.

Throughout the revelations of the German propaganda the names of Capt. Franz von Papen and Capt. Karl Boy-Ed, the German military and naval attachés at Washington, continually recurred. After an exhaustive investigation of their alleged activities, Mr. Lansing informed Count von Bernstorff on Nov. 30 that they were no longer acceptable to this Government and asked for their immediate recall, "on account," as his announcement of Dec. 3 stated, "of what this Government considers improper activities in military and naval matters." A request of the German Government for a statement of the evidence on which the dismissal was based was denied by the State Department, and on Dec. 10 Count von Bernstorff informed Mr. Lansing that the German Emperor personally had recalled the two officers. Under safe conduct granted by the Allies, Captain von Papen sailed on Dec. 22 and Captain Boy-Ed on the 28th.

Military Enterprises against Canada.—Late in December the Federal authorities uncovered a new phase of German activity, making American territory a base of military operations against Canada. On charges of this nature Paul Koenig, head of the bureau of investigation of the Hamburg-American Steamship Co., and two alleged accomplices were arrested on Dec. 17 and 18. On Dec. 23 a Federal grand jury in New York found two indictments, one charging Koenig and one of the other defendants with conspiracy to destroy the Welland Canal and other works of military importance in Canada, and the other charging Koenig and the third defendant with preparing a military enterprise to ascertain for the benefit of the German Government the number of troops and the nature and quantity of the supplies being sent through Canada to Great Britain and France, and the names of the steamships transporting them.

The only other discovered plot against Canada was an unsuccessful attempt of Werner Horn, a German reservist, to destroy the Canadian Pacific international bridge over the St. Croix River at Vanceboro, Me., on Feb. 2. After exploding a quantity of dynamite at the Canadian end, Horn escaped back to Maine, where he was arrested on complaint of the Canadian Pacific Railroad. The Canadian Government applied for the extradition of Horn, who claimed that his offense was an act of war and not extraditable. Without deciding the question the Government indicted Horn for illegal transportation of explosives in interstate commerce, on which charge he still awaits trial at Boston.

The President's Message on the German Propaganda.—In his annual message at the opening of the Sixty-fourth Congress President Wilson had this to say of the German propaganda, in urging the enactment of adequate laws for the punishment of conspirators against American neutrality and industries:

> I am sorry to say that the gravest threats against our national peace and safety have been uttered within our own borders. There are citizens of the United States, I blush to admit, born under other flags, but welcomed under our generous naturalization laws to the full freedom and opportunity of America, who have poured the poison of disloyalty into the very arteries of our national life; who have sought to bring

the authority and good name of our Government into contempt, to destroy our industries wherever they thought it effective for their vindictive purposes to strike at them and to debase our politics to the uses of foreign intrigue. Their number is not great as compared with the whole number of those sturdy hosts by which our nation has been enriched in recent generations out of virile foreign stocks; but it is great enough to have brought deep disgrace upon us and to have made it necessary that we should promptly make use of processes of law by which we may be purged of their corrupt distempers. . . .

I urge you to enact such laws at the earliest possible moment. . . . Such creatures of passion, disloyalty, and anarchy must be crushed out. They are not many, but they are infinitely malignant and the hand of our power should close over them at once. They have formed plots to destroy property, they have entered into conspiracies against the neutrality of the Government, they have sought to pry into every confidential transaction of the Government in order to serve interests alien to our own. It is possible to deal with these things very effectually. I need not suggest the terms in which they may be dealt with.

THE SIXTY-THIRD CONGRESS, THIRD SESSION

The President's Message.—President Wilson's second annual message, of Dec. 7, 1914, recommended the following measures for legislative action during the short final session of the Sixty-third Congress (*A. Y. B.*, 1914, p. 45).

1. Release of the resources of the national domain for development under proper safeguards.
2. Encouragement of the use of navigable waters outside the national domain for the generation of power.
3. Extension of a larger measure of self-government to the people of the Philippines.
4. Provision of a government-owned fleet of merchant steamships.
5. Ratification of the International Convention for Safety at Sea.
6. Provision for the survey and charting of the Alaskan coast.

Congress enacted only one item of this programme, the ratification of the International Convention on Safety at Sea, and that in a form which virtually withdraws the adherence of the United States. Stubborn pressure by the Administration failed to break the opposition to the project for government ownership and operation of shipping, while it diverted the energies of Congress from other channels of possible achievement. The Senate passed the House bill providing for the economical utilization of the resources of the public domain, but too late for conference. It took no action on the second measure of the conservation programme or on the Philippines bill (*A. Y. B.*, 1914, p. 3), while neither house acted on the recommendation to increase the equipment of the Coast and Geodetic Survey for the charting of Alaskan waters. The Burnett Immigration bill, prescribing a literacy test for immigrants, was passed by the Senate but failed through the President's veto (see XV, *Immigration*). The legislative record of the session includes only one measure of major importance, the La Follette Seamen's Act, which places new and heavy burdens on the merchant marine and an additional strain upon the foreign relations of the United States. A complete list of the acts of public interest is given on another page (see V, *The Sixty-Third Congress*).

The Ship Purchase Bill.—The chief incident of the session was the long and bitter conflict over the Administration project for the purchase by the Government of a fleet of merchant steamships and their operation by a corporation under government control. The Administration bill, practically identical with Mr. Alexander's original measure (*A. Y. B.*, 1914, p. 39), was introduced in the Senate (S. 6856, 63d Cong., 3d sess.) by Senator Stone (Mo.) on Dec. 9, and a week later the Committee on Commerce, rejecting the demand of the minority for hearings on the measure, reported it favorably by a vote of eight to six, Senator Vardaman (Miss.) voting with the Republicans in opposition. The bill authorized the Government, acting through a shipping board composed of the Secretary of the Treasury, the Postmaster-General and the Secretary of Commerce, to subscribe to the capital stock of any corporation having for its object the "purchase, construction, equipment, maintenance, and operation of merchant vessels in

the trade between the Atlantic, Gulf, or Pacific ports of the United States and the ports of Central and South America and elsewhere to meet the requirements of the foreign commerce of the United States." The initial capital stock of the corporation was limited to a maximum of $10,000,000, subject, however, to increase by the shipping board with the approval of the President. The Government was required to subscribe to 51 per cent. of the initial capital and each subsequent increase, and authorized to subscribe to any portion of the remainder not taken by public subscription. The bill further authorized the Government, acting through the shipping board and with the approval of the President, to purchase or construct suitable vessels for transfer to the corporation, and for this purpose empowered the Secretary of the Treasury, upon request of the shipping board, to issue Panama Canal bonds to an amount not exceeding $30,000,000. In payment for such vessels, the corporation was required to issue to the United States gold bonds at par bearing interest at not less than four per cent. Ships conveyed to the corporation were made eligible to admission to American registry, but were restricted to trade between the United States and foreign countries or the non-contiguous territories except Alaska and Porto Rico. The President was authorized also to charter, lease or transfer to the corporation naval auxiliaries suitable for commercial use and vessels owned and operated by the Panama Railroad Co., reserving, however, the right to resume possession of vessels thus transferred for use as naval auxiliaries or for other purposes. To carry out the provisions of the act the bill provided an appropriation of $10,000,000.

At the opening of the debate on Jan. 4, Senator Gallinger (N. H.), the Republican floor leader, warned the supporters of the Administration that the reputed purpose of the majority to force the bill through the Senate by the votes which Senator Stone claimed to have definitely committed to its passage, would be resisted "in every proper and parliamentary way," regardless of the Democratic threat of an extra session of Congress. Speaking at Indianapolis on Jackson Day, Jan. 8, President Wilson urged the necessity of the measure and challenged its Republican opponents in the Senate "to show their right to stand in the way of the release of American products to the rest of the world." Of the men who were "seeking to defy the nation" by opposition to the Ship Purchase bill, he said most were ignorant, some misguided, and some blind. At the same time he laid down a rigid standard of party loyalty, with which, however, the attitude of the Democratic majority in the Senate scarcely squared. On its merits the measure failed to attract consistent and hearty support. Several of the Democratic Senators suspected the orthodoxy of the project, holding the provision for government ownership and operation to veil a subsidy principle incompatible with true Democratic doctrine. Many of those untroubled by questions of principle doubted the expediency of the measure, and on individual provisions held widely divergent opinions. Between Jan. 16 and 23 six party conferences on the bill resulted in the adoption of several compromise amendments. In the final conference, Senator Stone, by a strong appeal to party loyalty, secured the unanimous adoption of a resolution pledging the Senate Democrats to support the bill, but in the absence of 16 members of the majority, the vote was little more than two-thirds of the party strength.

The Republicans meanwhile had organized their opposition and begun a determined filibuster on the floor of the Senate, which blocked for a fortnight the efforts of the Democrats to bring the measure to a vote. The Republicans warned the Administration that in the purchase of interned vessels of belligerents, the only ships available to serve the emergency purposes of the bill, the Government would buy an international quarrel with every ship. Influenced to some extent by this argument, and under the stress of the uncompromising resistance of the opposition, a group of seven Democratic Senators suddenly

deserted the Administration. On Feb. 1, Senator Clarke (Ark.) moved to recommit the Ship Purchase bill, pleading the greater urgency of rural-credits legislation to relieve the depression in the agricultural sections of the country. He carried with him Senators Vardaman (Miss.), Bankhead (Ala.), Camden (Ky.), Hardwick (Ga.), Hitchcock (Neb.), and O'Gorman (N. Y.); and this defection, in the absence of several members of the party, placed the Democrats in a minority. To prevent the recommitment of the bill to certain failure, the Democrats resorted for a week to the filibustering tactics of the Republicans, until the return of the absent Senators and the winning over of the Republican Senators Norris (Neb.) and Kenyon (Iowa) by concessions to their radical principles again gave them control of the Senate. On Feb. 8-10 they made a final effort to wear down the Republican opposition by keeping the Senate continuously in session, but on the evening of the third day Senators Norris and Kenyon refused further support to the Administration tactics and joined with the Republicans to force an adjournment. The session of 55 hours 11 minutes was the longest in the history of the Senate.

Defeated in the Senate, the Administration turned for support to the House. The amendments which won the two radical Republicans to the Administration bill, embodied in a substitute introduced by Senator Gore (Okla.) on Feb. 3 (S. 7552), were of a nature to perpetuate government ownership of shipping indefinitely beyond the emergency period. They provided that leases of government-owned vessels should run for periods of not more than one year, and should prescribe maximum freight rates to be charged to shippers; further, they prohibited the purchase of any vessel of a belligerent without assurances from the other belligerents that the transfer would result in no international complications. There was then pending in the House a bill (S. 5259, 63d Cong., 2d sess.) introduced by Senator Weeks (Mass.) on April 14, 1914, and passed by the Senate on Aug. 3, 1914, authorizing the Secretary of the Navy to employ available naval auxiliaries for the purpose of transporting mail, passengers and freight between the United States and the countries of South America and Europe, under such regulations and at such rates as the Secretary of the Navy might prescribe. A caucus of the House Democrats early on the morning of Feb. 16 approved by a vote of 154 to 29 the consolidation of the Weeks and Gore bills, with an additional provision for the dissolution of the shipping board and corporation two years after the close of the European War and the transfer of the government merchant fleet to the Navy Department for use as provided in the Weeks bill. Within 24 hours the measure was forced through the House under a special clôture rule, by a vote of 215 to 122, 19 Democrats voting with the minority.

When the amended Weeks bill reached the Senate on the day of its passage in the House, the Democratic leaders found that the radical Republicans refused to sanction the abandonment of permanent and unqualified government ownership which was the condition of the bill's acceptance by the House. In the face of this discouragement the Administration practically gave up the fight. President Wilson was persuaded that a special session of Congress, which he had repeatedly announced his determination to call in the event of the rejection of the Ship Purchase bill, was uncertain of result and politically inexpedient. To dispose of the pending appropriation bills the Senate Democrats on Feb. 18 entered into an agreement with the Republicans to send the Weeks-Gore bill to conference until the 27th. The House rejected the conference report and asked for a further conference, which Senator Fletcher (Fla.) moved to grant on March 3; but as Senator Weeks threatened to renew the filibuster, the motion was withdrawn and the bill abandoned.

The Seamen's Act.—The Senate ratified the International Convention on Safety at Sea on Dec. 16, 1914, but with the reservation of certain rights to independent legislation on standards of safety and the protection and

comfort of passengers and seamen (*A. Y. B.*, 1914, p. 517). The purpose of the proviso was to clear the way for the passage of the Seamen's Act, then in conference, which proposed to repeal existing laws for the arrest and return of seamen deserting in American ports and to establish new and unique standards of safety and comfort for vessels plying the waters of the United States. So far as the United States is concerned, the condition attached to the ratification of the Convention virtually nullifies the agreement.

The Seamen's Act, "to promote the welfare of American seamen in the merchant marine of the United States, to abolish arrest and imprisonment as a penalty for desertion and to secure the abrogation of treaty provisions in relation thereto, and to promote safety at sea," followed as a matter of course. President Taft declined to sign the Nelson bill, a more conservative measure passed by both houses in the Sixty-second Congress, because of its conflict with the treaty obligations of the United States (*A. Y. B.*, 1913, p. 4). Senator La Follette's radical measure (S. 136, 63d Cong., 1st sess.), passed by the Senate on Oct. 28, 1913 (*A. Y. B.*, 1913, p. 23), and by the House on Aug. 27, 1914 (*A. Y. B.*, 1914, p. 3), emerged from conference late in February and received President Wilson's approval on March 4.

The provisions of the Seamen's Act are reviewed in detail elsewhere in this volume (see XX, *The Merchant Marine*). The new burdens which it has placed upon the American merchant marine have practically driven the American flag from the Pacific (*ibid.*) and have proved so onerous to the shipping industry in general that the Department of Commerce has been constrained to relax the enforcement of the Act in certain important particulars (see XVI, *Labor*). The chief objection to the Act, however, has been based on the enforced abrogation of conflicting provisions of commercial treaties with friendly nations. The State Department announced on June 11 that the United States had given notice of abrogation to 24 of the principal nations, as provided in the Act. If they decline to consent to the excision of the particular articles involved, the United States is under obligation to cancel all the treaties.

THE SIXTY-FOURTH CONGRESS, FIRST SESSION

The President's Message.—The first session of the Sixty-fourth Congress opened on Dec. 6, and on the following day President Wilson delivered his annual message in joint session of the two houses. The burden of the message was national preparedness, the subject of a vast amount of discussion and agitation throughout the year. In addressing Congress a year before President Wilson deprecated a movement which began in the early months of the European War for the increase of the naval and military forces to provide an adequate system of national defense (*A. Y. B.*, 1914, p. 45). As the agitation attracted popular support, the President changed his attitude. In July he called upon the War and Navy Departments for reports on the adequacy of the national defenses, and at a banquet of the Manhattan Club in New York on Nov. 4 he definitely committed his Administration to a policy of preparedness "to vindicate our right to independent and unmolested action by making the force that is in us ready for assertion."

Introducing the subject with a discussion of Pan-Americanism as exemplified in the course pursued with regard to Mexico (see III, *International Relations*), the President's message dealt with national preparedness as follows:

> We insist upon security in prosecuting our self-chosen lines of national development. We do more than that. We demand it also for others. We do not confine our enthusiasm for individual liberty and free national development to the incidents and movements of affairs which affect only ourselves. We feel it wherever there is a people that tries to walk in these difficult paths of independence and right. From the first we have made common cause with all partisans of liberty on this side of the sea, and have deemed it as important that our neighbors should be free from all outside domination as that we ourselves should be; have set America aside

as a whole for the uses of independent nations and political freemen.

Out of such thoughts grow all our policies. We regard war merely as a means of asserting the rights of a people against aggression. And we are as fiercely jealous of coercive or dictatorial power within our own nation as of aggression from without. We will not maintain a standing army except for uses which are as necessary in times of peace as in times of war; and we shall always see to it that our military peace establishment is no larger than is actually and continuously needed for the uses of days in which no enemies move against us. But we do believe in a body of free citizens ready and sufficient to take care of themselves and of the Governments which they have set up to serve them. In our constitutions themselves we have commanded that "the right of the people to keep and bear arms shall not be infringed," and our confidence has been that our safety in times of danger would lie in the rising of the nation to take care of itself, as the farmers rose at Lexington.

But war has never been a mere matter of men and guns. It is a thing of disciplined might. If our citizens are ever to fight effectively upon a sudden summons, they must know how modern fighting is done, and what to do when the summons comes to render themselves immediately available and immediately effective. And the Government must be their servant in this matter, must supply them with the training they need to take care of themselves and of it.

To secure these ends the President recommended a definite programme for the increase of the military and naval forces of which full details are given elsewhere (see XII, *The Army; The Navy*).

All the other recommendations of the message were accessory to the main theme of national preparedness. The President revived the ship-purchase project and urged the enactment of a measure similar to that defeated in the preceding Congress (see *supra*) "but modified in some essential particulars." He announced also the resubmission of the bills "for the alteration and reform of the government of the Philippines and for rendering fuller political justice to the people of Porto Rico." An essential element of preparedness, he declared, was the creation of instrumentalities "by which to mobilize our economic resources in any time of national necessity." He foreshadowed the creation of an advisory body for this purpose, and urged as means of making the industries and resources of the nation ready for mobilization the enactment of measures to extend Federal aid to vocational education, to provide a system of rural credits, to open natural resources to development under proper safeguards, and to provide for a commission to inquire into the condition of the railroads.

The Financial Problem.—The additional revenues necessary to carry out the defense programme during the fiscal year 1917 the President estimated at $93,800,000. For many months, as is shown elsewhere in this volume (see XIV, *Public Finance*), the financial condition of the Government has been the object of much concern, and the steady decline in the Treasury balance has indicated that new sources of revenue must be found to meet the ordinary expenditures of the Government. Adding the cost of the defense programme, Secretary McAdoo estimates the total appropriations of the fiscal year 1917 at $1,285,857,808, including appropriations for the postal service, the Panama Canal and the sinking fund, and the net ordinary disbursements at $832,901,000. Based on existing law, the receipts for the same year are put at $580,200,000, leaving a deficit of $252,701,000. All this, the President declared, must be raised by the retention of expiring taxes and the imposition of new internal taxation. By extending the expiring War Revenue Act of Oct. 22, 1914, and retaining the duty of one cent a pound on sugar discontinued after May 1, 1916, by the Underwood Tariff Act of 1913, he showed that the deficit for the year 1917 would be reduced to $112,000,000, after provision for deficiency appropriations and a safe balance in the general fund. This additional revenue the President suggested should be raised by lowering the exemption limit and increasing the surtax of the income tax, with or without the other expedients of taxes on gasoline, automobiles and internal-combustion engines, bank checks, iron and steel, suggested by the Secretary of the Treasury (see XIV, *Public Finance*). Before adjournment for the holiday recess Congress passed a resolution extending the War Revenue Act one year to Dec. 31, 1916, which the President approved on Dec. 17.

POLITICS AND PARTIES

JAMES A. WOODBURN

A Year of Political Quiet.—The year has been unusually quiet in politics—a year of lull before the storm. Public attention has been largely absorbed by the international situation and the European War. It has been difficult, if not impossible, to arouse much interest in partisan domestic politics. The party organization men in the several states where the electoral contests are usually close have been at work, "organizing" and cultivating sentiment. But this work, much of which has been under the surface, has not excited much public attention. It has been merely a means of preparing for the coming campaign of 1916. For the most part, public interest has been dormant and the important political events of the year have been few and of no great significance.

President Wilson's Indianapolis Speech.—The first notable political utterance of the year was that of President Wilson in his speech at Indianapolis on Jan. 8. The occasion was that of a party celebration by Indiana Democrats of Jackson's Day, and President Wilson's speech was distinctly a party appeal, on the plane of a political campaign speech rather than on that of a statesman giving a full account of his stewardship to the whole people. To this extent it was a disappointment to many who had been favorable to his Administration. Claiming to speak "as an historian and not as a politician," President Wilson charged that the Republican party had not had a new idea in 30 years and that the party was "still a refuge for those who are afraid and for those who wish to consult their grandfathers about everything." "The task of the Democrats is to prove to the independent voter that the instrument he needs is the Democratic party and that it would be hopeless for him to turn to the Republican party." The President, recognizing the future importance of the Progressive party voters, and in the way of offering a bid for their favor, claimed that only about one-third of the Republicans are progressive while fully two-thirds of the Democrats are progressive. He pleaded for team work in the Democratic party and promised "deep bitterness to any who should dare to break the solidarity of the Democratic team for any purpose." He defended the achievements of his Administration and advocated the Ship Purchase bill which was then pending in Congress.

The Ship Purchase Bill.—The Wilson Administration was doomed to disappointment in the outcome of the Ship Purchase bill. This was a proposal to purchase and run by a Government-controlled corporation a fleet of merchant ships, in order to provide a merchant marine and sufficient carrying facilities for oversea trade. The House passed a ship-purchase measure on Feb. 17 as an amendment to a bill permitting the use of naval auxiliaries as commercial vessels which had already passed the Senate. In the Senate there was delay and filibustering and finally a party break, seven Democratic Senators dissenting from the Administration's policy on the subject. The House bill was finally "shelved," just before the dissolution of the Sixty-third Congress on March 4 (see also *The Sixty-third Congress, supra*). The President's message at the opening of the Sixty-fourth Congress (see *supra*) indicates that the Administration has not relinquished the intention of pushing the ship-purchase policy, and this policy may be a part of the Administration's programme to be defended before the country in the contest of 1916.

Bryan and Executive Patronage in the Dominican Republic.—An investigation of charges of incompetency against James M. Sullivan, American minister to the Dominican Republic, brought to light an incident touching executive patronage which proved to be a political embarrassment to Mr. Wilson's Administration and a serious reflection upon William J. Bryan's conception of public office as a public trust. In 1904, as the result of an international crisis due to defaults in interest payments to European holders of Dominican bonds, the United States was

allowed to take charge of the Dominican customs dues, and it succeeded through competent and impartial officers in straightening out Dominican finances, paying a part of the customs receipts to the Dominican Government, a part to the European creditors. When the Wilson Administration came in, the American Government was still administering the customs of the Dominican Republic, acting in the capacity of a trustee, or as a receiver, for the mutual protection of the Dominican people and their creditors. It transpired in January, 1915, that on Aug. 20, 1913, Mr. Bryan, while Secretary of State, had written as follows to Walker W. Vick, the American collector of customs at Santo Domingo:

> Can you let me know what positions you have at your disposal with which to reward deserving Democrats? Whenever you desire a suggestion from me in regard to a man for any place there call on me. You have had enough experience in politics to know how valuable workers are when the campaign is on and how difficult it is to find suitable rewards for all the deserving.

Mr. Bryan openly defended this letter in an expression of naïve attachment to the spoils idea of public office. The country, however, was displeased at learning that the Secretary of State had been seeking to use the revenues and offices of the people of the Dominican Republic, whom the United States was professing to serve, as rewards for party workers and to pay American political debts. The event brought serious criticism and loss of prestige to the Administration, and added heavily to the criticism showered upon Mr. Bryan on other grounds.

The Barnes-Roosevelt Suit.—In the political history of the year considerable significance attaches to the Barnes-Roosevelt libel suit. William Barnes, the well known Republican leader of Albany, N. Y., sued Mr. Roosevelt for $50,000 for libel, basing his suit on a newspaper statement by Mr. Roosevelt to the effect that Barnes had entered into a corrupt political alliance with Charles F. Murphy, the Tammany "boss," which made, in fact, a corrupt bi-partisan combination between certain political leaders and certain business interests inimical to the public welfare. The statement on which suit was brought read in part as follows:

> The interests of Mr. Barnes and Mr. Murphy are fundamentally identical and when the issue between popular rights and corrupt and machine-ruled government is clearly drawn, the two bosses will always be found fighting on the same side, openly or covertly giving one another such support as can with safety be rendered. These bosses do not hold the public offices which they control, yet they really form the all-powerful invisible government which is responsible for the administration and corruption of the public offices of the state.

The attorneys for Mr. Barnes sought to prove that Mr. Roosevelt in the past, while he was Governor and President, had worked with the bosses, Platt, Quay, Barnes, and others. This the defense admitted, but it denied that Mr. Roosevelt had worked *for* these bosses, or that he had allowed his official powers or political leadership to be perverted at any time to their ends against the public welfare. The Roosevelt defense clearly established the existence of a close bond between the Democratic and Republican machines in New York State. The evidence brought out the fact that there had been a combination in the legislature between Republican and Democratic senators of the machine type to prevent the enactment of a primary law; that legislation had been controlled by campaign contributions; that rapid-transit corporation interests represented by both Democrats and Republicans had opposed a franchise-tax bill and, having contributed to the campaign funds of both parties, had claimed legislative favors on that account. Mr. Roosevelt in establishing his case testified that Barnes had asserted that boss rule was the only kind of government that could exist under the party system, the Barnes-Murphy bi-partisan idea in politics being that the party organization should direct the law-making; and that if business interests which furnish the money are not protected they will not contribute and then party organization will be impossible. This meant, in substance, that the moneyed interests and the party machine should control the government regardless of popular wishes.

A decision in favor of Mr. Roosevelt was returned by the jury on May 22. The verdict showed that the jury believed the allegations of Mr. Roosevelt, that a corrupt ring made up of both parties had been controlling the government of New York State from 1898 to 1910. While the trial cast an unfavorable light on some portions of Mr. Roosevelt's political past, the general result was an increase of public favor for the former President and the further exposure to public condemnation of the bi-partisan corrupt politics in New York State which he had been so vigorously opposing and denouncing.

Elihu Root and the New York State Constitution.—Elihu Root, at the conclusion of the sessions of the New York State Constitutional Convention, recognised the existence of the "invisible" and boss-ruled government in that state and frankly admitted his past submission to it, but he showed that he had clearly seen the evil of the system and stood ready to denounce it and to seek to put an end to it. The defeat, by nearly a half-million majority, of the new constitution which Mr. Root had taken such a prominent part in framing and advocating before the people was interpreted as something of a blight upon the Presidential boom which had been launched for Mr. Root and as eliminating him from the list of Republican Presidential probabilities for 1916. The new constitution was looked upon as a "Root constitution" and it was opposed partly on that account. The greater part of the Democrats, many of the Progressives, and about all of the Socialists denounced the constitution as "reactionary," while Mr. Barnes (whom Mr. Root, as chairman of the Convention, had consented to honor with responsible appointments) opposed the new document because it was too progressive and "socialistic." (See also II, *The New York State Constitutional Convention.*)

The Elections.—Of the 48 states only eight held elections in November: Kentucky, Maryland, Massachusetts, Mississippi, New Jersey, New York, Ohio and Pennsylvania; only four of these states elected governors: Kentucky, Maryland, Massachusetts and Mississippi. Six of the eight states elected legislatures, in whole or in part: Kentucky, Maryland, Massachusetts, Mississippi, New Jersey and New York. In five of the states important constitutional issues were pending: a new constitution in New York, woman suffrage in New Jersey, Massachusetts, New York and Pennsylvania, and prohibition, as in the preceding year, in Ohio.

The election in Mississippi went by default, or without contest, since the Democratic primary nomination in that state is virtually deemed to be the real election. The Democrats regained Maryland but were barely able to hold Kentucky. These are normally Democratic states and the results were largely influenced by local conditions and issues. On the other hand, the Republicans regained Massachusetts, Governor Walsh (Dem.) being defeated for a third term by Samuel W. McCall (Rep.), who had been the Republican candidate against Governor Walsh in 1914. The net result was about a "stand-off" as between the two leading parties so far as these results may be said to show any political trend or probabilities for 1916.

The Massachusetts Contest.—Of the several state contests that in Massachusetts was the most significant, and it may be looked upon as representative of the political trend of the year. The Democrats adopted the more radical programme of progressive social reform. Apart from congratulating the country upon the administration of President Wilson and speaking in favor of neutrality and preparedness, the Democrats confined themselves to state issues, favoring the calling of a constitutional convention, the initiative and referendum, local self-government for cities, old-age pensions, and extension of free popular education by the establishment of a correspondence educational system, to open the avenues of advancement to thousands who cannot avail themselves of the present costly means of higher education.

The Republican platform on national affairs declared for protection, the "long-time cornerstone of every Republican platform," to be worked

for through an independent tariff commission which should furnish "the facts for an equal, impartial, unsectional law, since the Democratic tariff is a failure"; an adequate armed force against aggression; and an arraignment of the Administration's Mexican policy as "vacillating, prejudiced, and partial." Apart from these conventional partisan expressions, the Republicans in Massachusetts put forward a notably progressive social-service creed, involving political and social reforms for consideration in both the national and state fields of government. They declared for a state constitutional convention; biennial elections, instead of annual; the short ballot; amendments to the Federal Constitution in order to secure a national corporation law, a national divorce law, and the national regulation of the employment and hours of labor of women and children. The Republicans declared themselves also to be in favor of

> the extension of opportunities for vocational and general educational training; healthful housing; fire protection; reasonable hours and conditions of labor, especially in those industries continuously operating for 24 hours; the creation of labor exchanges; and the development of such industrial organizations as will tend to minimize unemployment and to distribute its effects when unavoidable over the entire industrial field. . . . We call to the attention of the legislature the subject of social insurance and the consideration and investigation of some system which will protect the home life against the hazards of sickness, irregular employment, and old age.

A plank for national prohibition was voted down, the initiative and referendum were not favored and woman suffrage was not mentioned.

This platform was of such liberalized and progressive character, and Mr. McCall was such an admirable candidate, whose record and personality were so entirely satisfactory to the Progressives of Massachusetts, that Charles Sumner Bird (who had been twice the Progressive candidate for governor, in 1912 and 1913, and in the latter year had polled 10,000 more votes than the Republican candidate), without committing himself in national politics, came to the support of Mr. McCall. The result was that the Republicans and Progressives of Massachusetts found themselves virtually, though unofficially, reunited, and were thereby able to recover the state from a Democratic administration, although Governor Walsh received almost 25,000 more votes than when he was elected in 1914. The Progressive vote in Massachusetts shrank to about 7,000 votes, less than three per cent., and therefore not enough to entitle the party to official recognition as a party.

The increased Democratic vote in Massachusetts would seem to indicate that a considerable number of the Progressives had gone to that party. Some, evidently, went to the Prohibition party and that haven of protest still stands open in every state. While the original Progressive vote in 1912 had come from the two parties in the probable ratio of ten to one, they seem to have gone back to the old parties in Massachusetts somewhat nearer the ratio of seven to three. This would indicate a positive tendency toward independence on the part of the Progressives. It is certain that without the adoption of an acceptable candidate and platform by the national Republican party in 1916 (such as the Massachusetts Republicans offered in 1915), Republican control of the Progressive vote can by no means be relied upon.

Claims of Republican Managers.—The Republican managers have announced, as the result of the vote in November, that the Progressive party is "dead in the East," while the Democratic managers are prepared to recognize the "collapse" of the Progressive party and that the "line up" in 1916 will be between the two old parties. The Democrats can hardly venture to hope that the contest over the Republican Presidential nomination in 1916 will reopen the wounds of 1912, but they rather expect that the Republican party will present a united front with most of the Progressives back in the fold. James B. Reynolds, secretary of the Republican National Committee, made in the fall a tour of 22 western states. He reported that the Republicans were everywhere optimistic; that Progressives were disbanding their organiza-

tions and returning to the Republican fold, especially in Illinois, Indiana, Kentucky, Montana, Michigan, Iowa, and Minnesota. Joseph M. Dixon, of Montana, who had been national chairman of the Progressive party in 1912, had resigned from that position and was doing all he could to bring the Progressives back into the Republican party. Senator Poindexter, of Washington, and Henry Allen, Progressive candidate for governor of Kansas in 1914, were doing the same. Thus, the Republicans claimed, the same tendency toward Progressive collapse which the elections revealed in the East was shown by investigation and inquiry in the West.

The Progressive Party.—It is, however, too soon to say that the Progressive party has disappeared. The forecast or claim of Victor Murdock, the national chairman, is that the party has permanent elements of strength; that a revival and accession of strength will come to it from the Democratic party which is now on the eve of division, and that the Progressive forces of all parties will be ready to combine in a formidable array of voting power in 1916 on social and industrial issues apart from the old issue of the tariff (syndicated newspaper article, Oct. 17; see New York *Tribune*). Mr. Murdock announced in October that after he had completed a personal canvass of the situation in the central West and on the Pacific coast he was "prepared to say flat-footedly that we Progressives are going into the 1916 fight as a party and to win." Mr. Murdock voiced a widespread Progressive complaint that the Republican state legislatures elected in 1914 had been flagrantly reactionary, in New York, Ohio, and elsewhere; and that at Washington "the doors are locked and double-locked against all the great progressive national reforms" and that these reforms are fought just as strenuously by the Republican leaders who want to get in as by the leaders of the party now in power.

The Democratic Outlook.—It is very doubtful that there will be opposition to President Wilson's renomination by his party. Mr. Bryan resigned from President Wilson's Cabinet in June to preach peace and love and righteousness among nations. He has antagonized President Wilson's policy of "preparedness" but there is no evidence that he intends to antagonize President Wilson's renomination or reëlection. The Republicans would be on unsafe ground in counting upon Democratic divisions. The Republicans' problem is to make such concessions in their platform and candidate as will prevent the Progressives from going in great numbers to the support of President Wilson. A considerable Progressive diversion in that direction would make Republican success unlikely.

Preparations for the Presidential Campaign.—At a conference in November the Progressive leaders of Missouri declared in favor of entering the campaign of 1916 with the same presidential ticket as in 1912, Roosevelt and Johnson. They asserted that there was

> nothing in the present attitude of either of the old parties that holds out any promise of the future. As in the 1912 campaign, the powers of graft and special privilege are in control of the old party organizations and are openly preparing to write platforms and nominate candidates in harmony with their interests. We therefore stand squarely on our national platform of 1912 and favor the nomination of national, state, and county tickets on that platform.

On Oct. 29 the chairmen of both the Democratic and Republican National Committees issued calls for meetings in Washington to select cities for the national conventions of 1916, the Democrats on Dec. 7, and the Republicans on Dec. 14. The Democratic convention was set for June 14, 1916, at St. Louis, and the Republican for June 7 at Chicago. It is rumored that the Progressive national convention will be called to meet in Chicago during the week of the Republican convention, with a view to the reunion of the two parties or to a separate Progressive nomination if Progressive forces do not control the Republican convention. In issuing his call for the Republican Committee, Charles D. Hilles, chairman of the Republican National Committee, set forth the probable line of

campaign for his party in 1916. It will include an attack on the Democratic tariff; criticism of the way the Administration has handled affairs in Europe and in Mexico; and charges of broken promises in administrative economy and in the platform pledge of 1912 in favor of a single term for the President; and attacks on the Ship Purchase bill (see *supra*) and other measures.

Active organizations are in the field within the Republican party backing the candidacy for President of ex-Senator Burton of Ohio, Senator Weeks of Massachusetts, Senator Cummins of Iowa, Senator Borah of Idaho, Senator Smith of Michigan, ex-Vice-President Charles W. Fairbanks, Senator Sherman of Illinois, and a following of more or less strength is supporting the candidacy of Justice Hughes, Elihu Root, and Governor Brumbaugh of Pennsylvania. Justice Hughes has refused to stand as a candidate and has forbidden the placing of his name on the ballot in states using the presidential primary.

Representation in the Republican National Convention.—It may be well to re-state here the plan proposed in 1914 for the readjustment of representation in the Republican national conventions which was briefly outlined in the last issue of the YEAR BOOK (p. 55). The plan reduces the number of delegates by 89, the loss falling mostly on the South, with a slight increase of voting power in the West (where women vote) as compared with the North and East. Certain states lose votes in the convention as follows:

Alabama	8	North Carolina.	3
Arkansas	3	Philippines	2
Florida	4	Porto Rico	2
Georgia	11	South Carolina.	7
Hawaii	4	Tennessee	3
Louisiana	8	Texas	16
Mississippi	8	Virginia	8
New York	2		

These reductions, fair as far as they go, do not seem to be based upon any general principle but to be made by arbitrary decision, to satisfy those who demand a reduction in Southern representation and at the same time not to make so much of a reduction as to discourage the maintenance of the Republican party in that section. It is contended that there are more Republicans in the South than the voting returns indicate, caused by the unfair and illegal disfranchisement of the negro vote, and that the representative rights of these voters ought to be considered. Therefore, the Committee has not reduced the representation to the actual basis of the party vote cast, but the representation is still allowed to rest, as in former years, on the basis both of statehood and population but to a degree not so unfair as formerly. The party vote in the state has become only one of the factors in determining the voting power of the state in the national convention.

This readjustment is not satisfactory to the newly formed National Republican Union, which at a meeting in Chicago (Nov. 29-30) decided to request of the National Convention that delegates be allotted to states after 1916 entirely on the basis of Republican votes. This organization is composed chiefly of former Progressives and Progressive Republicans. The Union commits itself to no candidate or programme "except to make the party truly representative of the majority sentiment within the party," desiring to make it an instrument of good government in the hands of a contented and participating membership.

Minor Parties.—The Prohibition party vote in Massachusetts increased to 20,000, the largest state vote in the history of the party. The near defeat of Mr. Stanley in Kentucky, the Democratic candidate for governor, was caused largely by his opposition to Prohibition, and these things, together with near success of Prohibition forces in Ohio, indicate a still rising tide of opposition to the saloon and that the anti-saloon cause will be a factor of importance in the political contests of 1916.

The Socialists met with a few scattered successes. They again elected the mayor in Schenectady, N. Y., and for the first time a member of the New York legislature, from Brooklyn. In Massachusetts, Charles H. Morrill was elected to the legislature from Haverhill for the seventh time.

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II. POPULAR GOVERNMENT AND CURRENT POLITICS

Arthur N. Holcombe

Progress of Popular Government.—In 1915, public opinion, so far as revealed in the action of legislative bodies and in the results of elections, was on the whole unfriendly to further immediate progress in the popularization of government. The tendency towards reaction, after the adoption during the previous decade of many radical changes in the American political system, already evident in 1914, became more pronounced. In the four greatest eastern states woman suffrage was submitted to the voters and rejected by them. The direct popular initiative was not submitted to the voters in any state, but the popular referendum was submitted in one state and adopted. The recall was not submitted to the voters in any state. Statewide direct-primary laws were adopted in three states, bringing the total number of direct-primary states to 42, and provision was made in the same number of states for so-called presidential-preference primaries, thus bringing the total number of presidential-preference primary states to 21. The present status of these various reforms is indicated in the table on the next page.

Reform of State Constitutions.—Nevertheless the people are clearly not satisfied with the existing conditions of government and politics. In many states there was much discussion of various proposed reforms, and in several states the conclusion was reached, at least by the legislatures, that the whole subject of further reform, so far as concerns state government and politics, should be referred to constitutional conventions. The method of piecemeal alteration by separate constitutional amendments or statutory enactments for special purposes seems on the point of yielding to the method of general overhauling by select bodies of men charged with the duty of examining the constitutions of the states in their entirety and endowed with power to submit comprehensive and systematic revisions for the approval of the people.

In Massachusetts both major parties pledged themselves in their state platforms for 1915 to submit to the voters the question of calling a constitutional convention to consider the revision of the existing constitution. In Pennsylvania a constitutional commission was created to report on the need for a general revision of the constitution of that state, and in Indiana and Illinois the agitation for conventions to revise the antiquated constitutions of those states has been organized. In South Dakota and Tennessee the question of calling a constitutional convention will be submitted to the voters in 1916, and in New Hampshire in 1918. In Rhode Island, where the existing constitution is construed to forbid the holding of a constitutional convention, a commission previously appointed reported in 1915 in favor of a number of changes, but no action has yet been taken by the legislature. In 1915 a convention was actually held only in New York State. Because of the growing interest in constitutional conventions as agencies of reform, as well as because of the novelty of some of the particular reforms proposed for adoption, the holding of the New York convention was the most significant political event of the year, so far as relates to the structure and operation of government (see *The New York Constitutional Convention, infra*).

Progressive Legislation.—Although there was much less progressive legislation in 1915 than in recent years, the volume of legislation continued

STATUS OF POPULAR GOVERNMENT

State[1]	Woman Suffrage	Initiative and Referendum[3]	Recall[5]	Direct Primary[8]	Presidential Preference Primary
New England					
Me.	....	1908[3]	....	1911	....
N. H.	....	....	....	1909	1913
Vt.	....	....	....	1915[9]	1915[9]
Mass.	*1915*	....	....	1911	1912
R. I.	....	....	....	....	....
Conn.	....	....	....	....	....
Middle Atlantic					
N. Y.	*1915*	....	....	1913	1913
N. J.	*1915*	....	....	1911	1911
Pa.	*1915*	....	....	1913	1913
East-North-Central					
Ohio	....	1912	....	1908	1913
Ind.	....	....	....	1915	1915
Ill.	1913[2]	....	....	1910	1912
Mich.	....	1913	1913[5]	1909	1912
Wis.	....	....	....	1903	1911
West-North-Central					
Minn.	....	**1916**	....	1912	1913
Iowa.	**1916**	**1916**	....	1907	1913
Mo.	....	1908	....	1907	....
N. D.	....	1914	....	1907	1911
S. D.	**1916**	1898[3]	....	1907	1912
Neb.	....	1912	....	1907	1911
Kan.	1912	....	1914[6]	1908	....
South Atlantic					
Del.	....	....	....	....	....
Md.	....	1915[4]	....	1910	1912
Va.	....	....	....	1912	....
W. Va.	**1916**	....	....	1915	....
N. C.	....	....	....	....	1915
S. C.	....	....	....	P.R.[8]	....
Ga.	....	....	....	P.R.[8]	....
Fla.	....	....	....	1913	....
East-South-Central					
Ky.	....	....	....	1912	....
Tenn.	....	....	....	1909	....
Ala.	....	....	....	P.R.[8]	....
Miss.	....	....	....	1912	....
West-South-Central					
Ark.	....	1910	....	P.R.[8]	....
La.	....	....	1914[5]	1912	....
Okla.	....	1907	....	1908	....
Tex.	....	....	....	P.R.[8]	....
Mountain					
Mont.	1914	1906[3]	....	1912	1912
Idaho.	1896	1912[3]	1912[5]	1909	....
Wy.	1869	....	....	1911	....
Colo.	1893	1910	1912[7]	1910	....
N. M.	....	1911[4]	....	....	....
Ariz.	1912	1911	1911[5]-12	1909-12	....
Utah.	1896	1900[3]	....	....	....
Nev.	1914	1904[4]-12	1912	1909	....
Pacific					
Wash.	1910	1912[3]	1912[5]	1907	....
Ore.	1912	1902	1908	1904	1910
Cal.	1911	1911	1911	1909	1911
Total.	12	20	10	42	21

NOTE.—Dates in **boldface** are those of proposed submission to the people; the date *1915* in *italics* denotes rejection by the people during the year.

[1] States are arranged by geographical divisions according to the classification of the U. S. census. [2] Women may vote for presidential electors and local officers, and for state officers if the office is created by statute. [3] In six of the 18 states possessing the initiative and referendum, the initiative applies to statutes but not to constitutional amendments, viz., Maine, South Dakota, Montana, Idaho, Utah, and Washington. [4] The referendum only. [5] In four of the ten states possessing the recall, it does not apply to judges, viz., Michigan, Louisiana, Idaho, and Washington. [6] The recall applies also to appointive officers. [7] The recall applies also to judicial decisions. [8] In those states indicated by P.R. the direct primary is conducted under the rules of the Democratic party, but is not established for all parties by statute. [9] Date when law becomes effective to be determined by voters in spring of 1916.

large. According to the valuable, though incomplete, Report of the Committee on Noteworthy Changes in Statute Law to the American Bar Association, at Salt Lake City in August, 1915, the total number of bills introduced in the regular legislative sessions in 43 states amounted in round numbers to 58,600, and in the three sessions of the Sixty-third Congress to 29,400. In 40 of the 43 states over 16,000 separate statutes had already received the approval of the legislatures at the time of the report. Of these the governors vetoed more than 1,000, leaving over 15,000 to become laws. In California, New York, and Pennsylvania, the numbers of vetoes were 225, 223, and 211 respectively.

The small proportion of this vast output of legislation which relates to the various topics comprised under the head of popular government is discussed in the following pages. Among measures which were proposed but failed of adoption, one of the most interesting was the so-called Bailey bill, submitted to Congress by Mr. Bailey (Pa.) in January, to permit states choosing three or more Congressmen to elect them by a method intended to secure the proportional representation of all parties or groups of voters according to their respective numbers. The method provided in the bill was that known as the list system (*A. Y. B.*, 1914, p. 64). The House Committee on Election of President, Vice-President, and Representatives in Congress gave a public hearing on this bill on Feb. 16, but no further action was taken. The principle of the bill was advocated by the Proportional Representation League and by the National Popular

Government League, the latter being one of the organizations interested in securing the submission to the states of the so-called "gateway" amendment to the article providing for the amendment of the Constitution of the United States (*A. Y. B.*, 1912, p. 46). The National Association for Constitutional Government, organized in 1915 under the leadership of Dr. David Jayne Hill, has for its purpose the preservation of the institutions of the United States, primarily "by explaining their meaning," and secondarily "by demanding sufficiently deliberate consideration of proposals of change in the national Constitution to warrant a reasoned acceptance of them before their adoption"; it will presumably oppose the efforts of such organizations as the National Popular Government League to hasten the amendment of the Federal Constitution.

WOMAN SUFFRAGE

Legislative Action.—The question of votes for women was the most widely discussed question of the year in the field of popular government. The legislatures of half the states considered proposals to extend the franchise to women, either on the same terms as men by constitutional amendment or on such terms as might be feasible without constitutional amendment. In Iowa, Massachusetts, New York, New Jersey and Pennsylvania, the submission of constitutional amendments establishing equal suffrage for men and women had already been approved by preceding legislatures, and the endorsement of submission by the legislatures of 1915 was all that was necessary in order to bring the question before the voters. In the last four states, the question was voted on at the fall elections in 1915; in Iowa, it will be voted on at the general election of 1916. In two other states, where endorsement of submission by one legislature is sufficient to bring the question before the voters, the necessary action was taken by the legislatures of 1915 and the question will be voted on in 1916, namely in South Dakota and West Virginia. In Tennessee the legislature of 1915 approved the submission of the question to the voters, but there must be an endorsement of this action by another legislature before the question can be submitted. In Arkansas, where the legislature of 1915 also approved the submission of the question to the voters, a requirement in the state constitution that no more than three measures may be submitted to the people at any one election will prevent the submission of the suffrage question in 1916, since provision had already been made for the submission of three measures. In a dozen or more state legislatures woman-suffrage measures met defeat. In some of these states the mode of amending the constitution is so difficult that the advocates of equal suffrage for women preferred to ask for such limited extension of the franchise as might be within the power of the legislature to grant without a constitutional amendment. Illinois, where the legislature of 1913 authorized women to vote for presidential electors and certain municipal and other local officers, is an example of such a state. Following the precedent there established, the demand for presidential suffrage, so-called, was made in 1915 in several states, but without success. The net result of the legislative activity of 1915 was to provide definitely for the submission of the question of votes for women to the voters of four states in 1915 and to the voters of three states in 1916, and to make contingent provision for the submission of the question at some future time to the voters of two other states.

The Suffrage Campaign.—The campaign for the adoption of the equal-suffrage amendments submitted to the voters in the four great eastern states, Massachusetts, New York, New Jersey and Pennsylvania, was the most active and the most hotly contested of all the campaigns yet held for the extension of the franchise to women. The leading civic and industrial organizations having a right to voice the opinions of women either had already endorsed woman suffrage or were placed on record in

favor of political equality between men and women; these included, notably, the General Federation of Women's Clubs, representing the organized club-women of the country, the National Grange, representing the women living on the farms, the American Federation of Labor and the National Women's Trade Union League, representing the working women in the cities and industrial districts, the National Educational Association, representing the school teachers of the country, the National Association of Collegiate Alumnae, representing the college graduates, the Women's Christian Temperance Union, and many other organizations of a similar character. Some organizations, such as the Daughters of the American Revolution, have declined to express any opinion on political questions such as that of votes for women, but no important organization representing the opinions of women went on record as opposed to the extension of the franchise. In Massachusetts, where an election for governor was also held, every candidate for governor announced himself in favor of woman suffrage, but neither the Republican nor the Democratic party endorsed it in its platform. President Wilson and five members of his Cabinet were voters in states where the issue was to be settled at the polls. The President and four of the Cabinet-members, Secretaries Redfield, McAdoo, Garrison and Wilson, announced their intention to vote in favor of woman suffrage; the fifth failed to register and declined to state how he would have voted had he been able to do so. At the same time the President was careful to state that he considered the question a non-partisan one, which should be settled by each state for itself and should not be introduced into national politics. The New York Constitutional Convention avoided the question, and the major political organizations in general assumed a noncommittal attitude, at least in public. The leading men in all parties in all the campaign states declared themselves for or against the suffrage for women, but the actual campaigning was done in the main by the women themselves. The anti-suffragists were equally active, and the question of woman suffrage was more thoroughly discussed both in the press and on the stump than any other question submitted to the voters of the eastern states in modern times.

Results of Elections.—New Jersey was the first of the eastern states to vote on the question. At a special election on Oct. 19th, woman suffrage was defeated by 133,282 to 184,390. Two weeks later, on Nov. 2, it was defeated in Massachusetts, New York, and Pennsylvania by large majorities (see VI, *Amendments to State Constitutions*). The advocates of equal suffrage immediately inaugurated a new campaign for the extension of the ballot to women by means of an amendment to the Federal Constitution (*A. Y. B.*, 1914, pp. 59-61).

INITIATIVE, REFERENDUM, AND RECALL

Direct Legislation.—The only state to vote in 1915 on any constitutional amendment relating to direct legislation by the electorate was Maryland, where an amendment to provide for the referendum alone was submitted. This amendment was endorsed by both the major parties and was adopted at the polls by a vote of 33,150 to 10,022. In two states, Iowa and Minnesota, the legislatures approved amendments for submission to the voters in 1916. The Minnesota amendment is substantially like that submitted to the voters in 1914 (*A. Y. B.*, 1911, p. 183; 1913, p. 76), which received four times as many affirmative votes as were cast in the negative, but failed of adoption because of the provision in the constitution of that state that amendments to be adopted must receive an affirmative majority of all the votes cast in the election. The amendment to be submitted in Iowa is the same as that approved for the first time, as required by the constitution of that state, by the legislature of 1913 (*A. Y. B.*, 1913, p. 76). In four states, Arizona, California, Ohio and Washington, the legislatures of 1915 proposed amendments to the existing provisions of their respective consti-

tutions and laws relating to the initiative and referendum, to the end that the process of direct legislation might be more adequately safeguarded against various alleged abuses. In Arizona it was proposed that no measure may be adopted under the direct popular initiative unless it receives a majority of all the votes cast in the election; in California, that no proposal to contract debt may be approved by less than a two-thirds majority of those voting thereon (defeated); in Ohio, that no measure twice defeated at the polls may be submitted oftener than once in six years (defeated); and in Washington, that initiative-petitions must be signed in the presence of an officer authorized to administer oaths, and that no one but owners of property may vote on proposals to contract debt. In Arkansas, on the other hand, an amendment was initiated under the provisions of the existing law to diminish the present restrictions upon the power of direct legislation.

The Recall.—There was no noteworthy action in the states during 1915 with respect to the direct popular recall of officers. An act of Congress (Acts of the 63d Cong., 3d sess., chap. 2), however, had an important bearing on a proposal much discussed during the presidential campaign of 1912, the recall of judicial decisions (*A. Y. B.*, 1912, p. 67). This act provides that the Supreme Court of the United States may review on writ of *certiorari* the decisions of state supreme courts holding state statutes unconstitutional because of conflict with the Constitution, treaties, or laws of the United States. Heretofore, as is pointed out in the Report of the Committee on Noteworthy Changes in Statute Law to the American Bar Association,

> there has been no review of such decisions because, the statute having been declared unconstitutional, and hence unenforceable in the state courts, no one was deprived of any rights which he might ask the United States courts to vindicate. One supreme court might hold a workmen's-compensation law contrary to due process under the Fourteenth Amendment and therefore unconstitutional, while another state court might hold similar legislation consistent with the due-process requirement and hence constitutional.

Such inconsistent decisions have occasionally occurred, especially in connection with so-called social-welfare legislation, and the change, by enabling the Supreme Court of the United States to give a uniform interpretation to the Federal Constitution in all cases arising thereunder, undoubtedly diminishes one of the causes of criticism of the exercise of the judicial power to declare statutes unconstitutional. It does not entirely remove the causes of such criticism, however, since it is still possible for the supreme courts of states, where the due-process clause exists in the state constitution, to differ as much as heretofore in their interpretation of the meaning of the clause as it appears in the constitutions.

ELECTORAL REFORM

Absent Voting.—Four states legislated in 1915 with respect to the subject of absent voting (*A. Y. B.*, 1914, pp. 67-68). The total number of states which make some provision for participation in elections on the part of voters unable to be at home on election day is now nine, the new states added to the list in 1915 being Colorado, Michigan, Montana and Washington. In addition, a constitutional amendment authorizing the legislature to deal with the subject was proposed in Texas, and in Massachusetts the legislature directed that a special report on the subject be prepared and laid before the next legislature. In New York the Constitutional Convention approved a proposal to facilitate registration by voters unable to be at home during any of the days of registration. There are unmistakable signs in many states of a disposition to modernize an electoral system which in some respects is ill adapted to the conditions of modern industrial life, but much remains to be done. New corrupt-practices acts were adopted in Kansas, Louisiana and Nevada, but in general there was no important legislation in this connection. Preferential voting at primary elections was adopted in one state, Indiana (see *infra*), but

was abandoned in two states, Wisconsin and Minnesota (*A. Y. B.*, 1914, p. 66).

Direct Nominations.—There was less legislation than in former years with respect to the conduct of primary elections and the nomination of candidates. Two states, Wyoming and Illinois, adopted the principle of non-partisanship in the nomination and election of judicial officers. In the former state the law has a general application; in the latter it is restricted to Cook County. In California an act extended the principle of non-partisanship, already established for judicial and local officers, to all officers chosen in the state with the exception of presidential electors, United States Senators, and Representatives in Congress. The purpose of the change from partisanship to non-partisanship in the selection of state officers was to separate so far as possible national and state issues, not to abolish parties in the government of the state. The Progressive leaders, who were responsible for the legislation, hoped it would stimulate the organization of state parties to represent differences of opinion among the voters in state affairs. The opponents of the law invoked the referendum against it, and it was submitted to the voters on Oct. 26, and rejected by them. A piece of reactionary legislation, intended to pave the way for a return to the system of nominating partisan candidates for state office in delegate conventions was similarly held up in the neighboring state of Washington. In South Dakota the Richards primary law, twice approved by the voters at the polls (*A. Y. B.*, 1912, p. 60; 1913, p. 74), was finally repealed by the legislature itself and a substitute of the usual type enacted. The South Dakota Supreme Court sustained this repeal of a popularly initiated act, but held that the legislature could not prevent a referendum on such appeal by declaring it an emergency. In three states, Indiana, Vermont and West Virginia, comprehensive state-wide primary laws were enacted for the first time, bringing the total number of direct primary states to 42. In Vermont, however, the legislature, distrustful of the approval of the voters, provided that the direct-primary law should take effect either in 1916 or in 1927, the voters themselves to choose between the two dates at the spring town-meetings. If the majority of the voters are opposed to the law, they can thus defer its enforcement for a decade, during which period the legislature will presumably repeal it, unless public sentiment should subsequently become more favorable. This curious arrangement is substantially a submission of the measure to a referendum, a procedure which the constitution of the state does not permit except by such process of indirection.

Indiana Direct-Primary Law.—The Indiana direct-primary law of 1915 contains a number of novel features worthy of special note. Separate ballots are provided for each party polling ten per cent. of the vote at the last preceding election. Other parties do not come under the law. There is no provision for party enrolment, although a registration law was passed at the same time as the primary law, but a voter, in order to participate in a primary, must declare that he has in the past generally supported the candidates of the party for whose ballot he calls and intends to support its candidates at the ensuing election. The ballot is so arranged as to permit the voter to indicate his first and second choices among the candidates for the most important offices, namely, governor, United States Senator, and President. The preference of the voters is ascertained according to the method first adopted in Wisconsin (*A. Y. B.*, 1912, p. 69), and if any candidate for one of these offices is found to be preferred by a majority of the voters, he shall be declared nominated by the state convention, or, in the case of a candidate for presidential nomination, the state delegation to the national convention shall be instructed for him. If no candidate is preferred by a majority, the nomination may be made by the state convention at its discretion. The state convention is also authorized to make nominations for all the minor places on the state ticket, and candidates for these nominations do not enter the primaries at all. Candidates for nomination to

the legislature and local offices are selected directly by the voters in the primaries without the use of preferential voting. Delegates to the national conventions are chosen by the state conventions and must be pledged to support the candidates for the several presidential nominations preferred by the majority of the several parties, respectively, voting in the primary, unless no preference is expressed. This law possesses three distinct advantages over primary laws of the ordinary type. First, the exclusion from the primary of candidates for minor places on the state ticket relieves the voters of the burden of making a choice between candidates for offices in which they are not ordinarily interested, that is, it introduces the principle of the short ballot into primary elections. Second, the system of preferential voting removes the danger of objectionable minority nominations in the primaries, which is always present when there are more than two candidates for a single nomination and the law awards the nomination to the candidate with a plurality. Third, the reservation to the state convention of the functions of nominating candidates for minor places on the state ticket, of nominating candidates for the major offices when no preference is expressed by a majority in the primary, and of selecting delegates to the national convention subject to the instructions, if any, expressed by a majority in the primary, makes the state convention a more influential organ of party government than under most direct-primary laws, which is desirable if it is to attract the type of men who will draft suitable platforms and otherwise properly represent the members of the party at large in the general conduct of party affairs.

Presidential Preference Primary.—The adoption of presidential preference primary laws in Indiana and West Virginia in 1915 brings the total number of presidential-preference primary states to 20 (*A. Y. B.*, 1913, pp. 72-74) or, including Vermont, to 21. A majority of the delegates to the national conventions of both the major parties in 1916 will be chosen in these states and the operation of the system will be observed with interest. Two important points are not yet clear in connection with the operation of this system, namely, how long are delegates from states which provide for pledging their delegations to the choice of the voters as indicated in the primaries to be bound by their pledges, if their candidate fails to receive a nomination upon the first ballot, and how far are delegates from states which do not provide for pledging their delegations to the choice of the voters as indicated in the primaries bound to observe the preference of those whom they represent. The experience under the ten presidential-preference primary laws which were in operation during the primary campaign of 1912 was inconclusive on both these points (*A. Y. B.*, 1912, pp. 61-63).

THE NEW YORK STATE CONSTITUTIONAL CONVENTION

Organization and Personnel.—The seventh Constitutional Convention held in the state of New York convened at Albany on April 6, 1915. The Convention consisted of 168 delegates, of whom 15 were elected at large and 153 by senatorial districts, three from each district. The delegates were elected at the regular election in November, 1914 (*A. Y. B.*, 1914, p. 57), 116 being chosen as Republicans and 52 as Democrats. A temporary organization was effected, and the Convention adjourned to April 26, when it reassembled and effected a permanent organization. The Convention met regularly from April 26 to Sept. 4, when it adjourned until Sept. 9, in order to give time for the committee on revision and engrossment to prepare the final draft of the constitution with proposed amendments, and adjourned *sine die* on Sept. 10. During this period 725 proposals to amend the constitution were introduced and 33 were adopted. The final draft of the constitution with the proposed amendments was approved for submission to the people by a vote of 118 to 33, the affirmative being composed of 101 Republicans and 17 Democrats, the negative

composed of five Republicans and 28 Democrats.

The Convention organized by the choice of former U. S. Senator Elihu Root as president, and of Jacob G. Schurman, president of Cornell University, and Morgan J. O'Brien as vice-presidents. Thirty standing committees were appointed by the president, of which the most important proved to be the following: judiciary, under the chairmanship of former U. S. Attorney-General George W. Wickersham, who acted as floor-leader for the majority party; state finances, under the chairmanship of former Secretary of War Henry L. Stimson; governor and other state officers, under the chairmanship of Frederick C. Tanner, chairman of the Republican State Committee; cities, under the chairmanship of Seth Low, former mayor of New York; taxation, under the chairmanship of Martin Saxe of New York; and rules, under the chairmanship of John Lord O'Brian of Buffalo. Other conspicuous leaders on the Republican side were William Barnes, Jr., chairman of the committee on legislative powers; State Senator Edgar T. Brackett of Saratoga, chairman of the committee on the legislature and its organization; Louis Marshall of New York, chairman of the committee on the bill of rights; Herbert Parsons of New York, chairman of the committee on industrial interests and relations; and Jacob G. Schurman, president of Cornell University, chairman of the committee on education. On the Democratic side the leaders were Robert F. Wagner and Alfred E. Smith, the regular party leaders in the state Senate and Assembly, respectively, and Judge Morgan J. O'Brien, De Lancey Nicoll, John G. Saxe, William F. Sheehan, John B. Stanchfield, and others prominent at the bar or in politics. In short, the Convention was a notable assemblage of distinguished men, the legal profession predominating.

Specific Defects in the State Government.—The New York Constitutional Convention of 1915 was the first to meet in 21 years. During the period that had elapsed since the convention of 1894, great changes had come in the industrial and social life of the state. As Mr. Root observed in his inaugural address, "the business which government is required to undertake has vastly increased both in magnitude and variety and there is a widespread feeling that in some respects the business of the government has outgrown the organization of government." In his valedictory five months later, he elaborated this idea.

> When we came to our work on the 6th of April last, we addressed ourselves first to studying the conditions of the government of the state. We found that there were serious evils which had resulted in an enormous increase of expenses from $12,000,000 at the time of the last convention to $42,000,000 at the time of our meeting; an enormous increase of indebtedness and an apparent impossibility meeting all attempts to curtail expenses or to prevent the further accumulation of debt. Upon further inquiry we found that the executive and administrative organization of the state was loose, confused, ill-regulated; that 150 and more separate agencies were going about the business of government, responsible to no one in particular, each one spending all the money that it could get, and there was no such concentration of responsibility and power as was necessary to bring to accountability the agencies of the state which were plunging our people into extravagance and debt. We found that the legislature of the state had declined in public esteem and that the majority of members of the legislature were occupying themselves chiefly in the promotion of private and local bills, of special interests, . . . upon which apparently their reëlections to their positions depended, and which made them cowards and demoralized the whole body. We found that the course of justice was slow and expensive and hindered by technicalities and subtleties which kept honest men out of their rights. We found that the great offices, the hundreds of offices of the state were swarming with men who held sinecures, who were put in their places for the benefit of particular organizations and not for the services that they were to render to the state.

In short, Mr. Root and his associates found most of the specific evils which the critics of the state governments have been decrying for the past ten or fifteen years.

Boss Rule and Invisible Government.—But this was not all. Mr. Root and his associates also found grave evils of a general and fundamental nature. The speech, delivered in the Convention on Aug. 30, in which Mr. Root proclaimed these findings, created a profound impression.

What is the government of this state? What has it been during the 40 years of my acquaintance with it? The government of the constitution? Oh, no. . . . From the days of Fenton and of Conkling . . . down to the present time, the government of the state has presented two different lines of activity, one of the constitutional and statutory officers of the state, and the other of the party leaders, they call them party bosses. They call the system—I didn't coin the phrase, I adopt it because it carries its own meaning—the system they call "invisible government." For I don't remember how many years Mr. Conkling was the supreme rule in this state; the governor did not count, the legislature did not count; comptrollers and secretaries of state and what not did not count. . . . Then Mr. Platt ruled the state . . . and the capitol was not here; it was at 49 Broadway. . . . The ruler of the state during the greater part of the 40 years of my acquaintance with the state government has not been any man authorized by the constitution or by the law, and, sir, there is throughout the length and breadth of this state a deep and sullen and long-continued resentment at being governed thus by men not of the people's choosing.

This charge was not successfully disputed, but with respect to the remedies that should be applied there were wide differences of opinion among the members of the convention.

Conservative Principles of Reform.—The most numerous, and as the event proved, the most influential group in the convention was that which came to be known as the "Federal crowd." This group accepted the leadership of Wickersham, Stimson, Tanner, Parsons, J. L. O'Brian, and above all of Root himself. On the strength of their criticism of the evils of "boss rule" and of "invisible government" they might be classed with the Progressives, but they rejected the more radical remedies advocated by the Progressives. Mr. Root expressly declared in his valedictory on Sept. 10 that

similar evils to those that we have found in our state government have been found in the governments of many other states. People of those states have had recourse to an abandonment or a partial abandonment of representative government. They have had recourse to the initiative and referendum and the recall, the recall of officers and the recall of decisions. In this convention we have offered the most irrefutable, concrete argument against those nostrums and patent medicines in government and in favor of the preservation of the representative government which is the chief gift of our race to freedom, by undertaking to reform representative government, instead of abandoning it, and to make it worthy of its great function for the preservation of liberty.

The principles upon which he and his followers undertook to bring about such a reformation were set forth in his inaugural address:

The fundamental principle to be applied I take to be that responsibility and power shall always go together. Responsibility without power can never be justly enforced, and power without responsibility can never be duly controlled. . . . Grants of power should be clear and definite and the responsibility should be open, public, ascertained and unmistakable, so that praise and blame, reward and punishment, may be assigned by the people themselves with justice and certainty.

In sort, the "Federal crowd" were reformers, but they were conservative reformers. They wished to make the state government more efficient in practice rather than more popular in form.

The State Administration.—The most important project in the general plan of reform desired by the "Federal crowd" was the consolidation of executive power in the hands of a chief executive elected by the people. They desired that the governor should become in fact, what he had long been only in name, the chief executive of the state, and to this end they proposed that he alone should be elected by the people (together with a lieutenant-governor), that he should be held personally responsible for the appointment of the other principal executive officers, and that the various administrative departments should be so classified as to bring them all under the direction of some one of the principal executive officers appointed by the governor. Such a plan involved (1) the abolition of popular elections in the case of minor state administrative officers; (2) the abolition of the power of the Senate to confirm or refuse to confirm executive nominations; (3) the reorganization of the 150 and more separate administrative agencies into a manageable number of civil departments; and (4) the extension and strengthening of the civil-service system. They desired further an alteration in

the relations of the executive with the legislature, to the end that the chief executive might not only be supreme in the administration of the laws, but might also take the lead in the formulation of legislative policies and in the enactment of laws. Such a plan involved (1) the creation of more direct and intimate relations between the governor and his principal advisors, the department heads, on the one hand, and the members of the legislature on the other; (2) the restriction of the legislature to the function of enacting laws of general application and of making necessary and proper appropriations for the conduct of the state government; and (3) the grant of power to the legislature for holding the chief executive to an effective accountability for the proper exercise of his increased powers. The plan indeed was not substantially different from that already described in the YEAR BOOK (1913, p. 82) as the conservative plan for the reform of state government.

The conservative reformers were not able to carry out this plan without important modifications. As originally projected, it encountered determined opposition in the Convention, particularly from a strong element within the Republican party itself. The remnant of the "old guard" under the leadership of Senator Brackett professed to see in the ostensible attack on "invisible government" an actual attack on the independence and authority of the legislature, that is, as they argued, of the representatives of the people, and hence of the people themselves. The scheme for the reorganization of the state government on its administrative side, the reduction in the number of elective officers, and the improvement of the methods of appointment, commonly described as the short ballot because the short ballot was its most conspicuous feature, as well as the scheme for the better regulation of the methods of making appropriations, commonly called the budget plan, and generally the plans for reducing the power of the legislature, whether by depriving the Senate of its control over appointments or by limiting the power of both houses with respect to local legislation and private claims, were alike denounced as conspiracies against the power of the people. A corresponding element among the Democrats also denounced the plans of the conservative reformers as "undemocratic." Furthermore the followers of the Republican incumbents of certain high administrative offices, who objected to the short ballot because it seemed to threaten their political prestige, joined hands with the "old guard" to compel modifications of the plan. In order to secure a part of their project the leaders of the Convention consented to sacrifice a part. By the resulting compromise the so-called short ballot was considerably lengthened, the power of the Senate over appointments was retained with respect to the appointments to four of the most important of the administrative departments, the scope of the budget was curtailed, and the proposed relations between executive and legislature were somewhat modified. The plan as actually adopted is described in detail on another page (see VI, *State Administration*).

Municipal Home Rule.—The second project in order of importance was that designed to secure home rule for cities. Unlike the short ballot and budget proposals, home rule raised a partisan issue. New York City, the greatest city in the state and greater than the whole of the rest of the state, is generally Democratic; the rest of the state is generally Republican. To grant complete home rule to New York meant, from the Republican standpoint, to surrender the control of the city to the Democrats, while not to grant complete home rule meant, from the standpoint of the Democrats, the perpetuation of Republican rule in municipal affairs from the state capitol. The proposal finally adopted by the Convention was a compromise satisfactory neither to extreme Republicans nor to extreme Democrats; it is described in detail on another page (see VII, *Municipal Home Rule*). In general terms it may be said, as was said in the address to the people adopted by the Convention on the day of final adjournment, that they proposed "as large a measure of home rule for the cities of the state as is consistent

with the recognition and retention of the sovereignty of the state." A plan of home rule for counties was also adopted, which preserved in the legislature a much greater degree of control than in the case of the plan for municipal home rule. By this plan the legislature was authorized to provide by general law different forms of government for all counties not wholly included within a city, to become effective in any county only when approved by the electors of the county, and was prohibited from passing local or special laws relating to any county except at the instance of the local authorities.

Legislative Apportionment.—The warmest partisan issue was that raised by the question of legislative apportionment. Under the scheme of apportionment devised by the convention of 1894 the city of New York, with a greater number of inhabitants than all the rest of the state, according to the census of 1910, elected only 63 of the 150 members of the lower house of the state legislature and only 22 of the 51 senators. This disparity in representation was secured by provisions basing representation upon the number of citizens rather than upon the total number of inhabitants, which operated against New York City with its disproportionate number of alien inhabitants, and apportioning representatives in a manner calculated to prevent New York City, as organized in 1894, from ever possessing more than half the total number of senators and to prevent the rural and upstate counties generally, no matter how small they might be (with one exception), from ever possessing less than one assemblyman each. Because of the subsequent creation of the greater city of New York, the provisions designed in 1894 to prevent the city from securing the control of the Senate seemed likely 20 years later soon to fail to accomplish their purpose. The Democratic party was opposed to the perpetuation of this or any other discrimination against New York City, and the Tammany Democrats were particularly interested in the removal of the limitations upon the representation of the city. The Republican party, on the other hand, had originated the restrictions, it profited by their maintenance, and it understood that a leading reason for the advocacy of a constitutional convention by Tammany in the spring of 1914, when the question of calling the convention was submitted to the people, had been the desire to take advantage of conditions supposed to be favorable to the Democrats in order to abolish the discrimination against New York City in the election of members of the legislature. A portion of the Republicans, under the lead of Senator Brackett, believed that their party ought not to lose its opportunity to maintain the supremacy of the upstate counties in the legislature, and thereby secure its own control of at least one branch of the state government as against the New York City Democracy. The Democrats argued that it was only fair that the majority of the people of the state should be able to control at least one branch of the state legislature, notwithstanding the fact that the majority happened to live in the metropolis. The "Federal crowd" proved unwilling to jeopardize the success of its other plans by unduly antagonizing the Democratic party in the matter of apportionment and eventually supported a compromise that left the system of apportionment substantially as it had been left by the convention of 1894.

The Judiciary.—The Convention sought to remove the basis for complaints of delays and undue expense in the administration of justice, by amendments dealing with (1) rules of procedure, and (2) the organization and jurisdiction of courts and judges. As to the first, it was proposed that the legislature be required to enact a short and simple civil-practice act which it may not alter or amend, unless at the request of the judges empowered to frame civil-practice rules, except at intervals of five years, and then only after report by a commission appointed to consider the subject. It was further proposed to grant to the judges of the Court of Appeals and the Supreme Court exclusive power to make rules of court to regulate details of civil practice. Secondly, the Convention recommended an increase in the num-

ber of justices in certain courts and certain changes in the organization of the higher courts for the purpose of reducing the accumulation of cases. Other changes proposed in amendments to the article relating to the judiciary were designed to improve the organization of municipal courts in New York City and to obviate delays in criminal cases. To enable the legislature to deal more humanely with delinquent children and to regulate domestic relations on a broader basis than the mere enforcement of penal laws, the Convention proposed that the legislature should have power to establish children's courts and courts of domestic relations. Though not the subject of partisan controversy or of such great public interest as the preceding amendments, the amendments proposed to the article relating to the judiciary were doubtless among the most important fruits of the work of the convention.

Finance, Taxation and Conservation.—Other notable changes proposed by the New York Constitutional Convention related to a variety of topics. Increases of salary were recommended for members of the legislature, governor, and certain judicial officers. Improved methods of contracting indebtedness for the purposes of the state were also recommended, and substitution of serial for sinking-fund bonds. The Convention further recommended an extension of state control over the assessment and collection of taxes on personal and intangible property, and the placing of additional restrictions upon the power of the legislature to grant exemptions from taxation, and made provision for a uniform rule of assessment of real property in the several counties (see XIV, *Public Finance*). The Convention provided for the creation of a conservation commission to protect the natural resources of the state, and of an industrial commission to protect the human resources of the state. It recommended the extension of the provisions of the workmen's-compensation amendment, adopted in 1913, to embrace compensation for injury or death resulting from occupational diseases of employees, and the grant of power to the legislature to regulate or prohibit manufacturing in tenement houses (see XVI, *Labor Legislation*). Other proposals adopted by the Convention were of less general interest and need not be noted here. A complete list of all the proposed amendments will be found in another part of the YEAR BOOK (see VI, *Amendments to State Constitution*).

Social and Industrial Welfare.—On certain issues the "Federal crowd" declined to take any positive stand. This was notably the case with respect to proposals relating to labor legislation, or, speaking more broadly, social and industrial welfare. Their unwillingness to face these issues was revealed most clearly with respect to two proposals relating to the minimum wage, which seemed to be generally accepted as the test question. On the one hand, the committee on legislative powers, under the leadership of William Barnes, reported an amendment designed to prevent class legislation in general and the minimum wage in particular. On the other hand, the committee on industrial relations, under the leadership of Herbert Parsons, reported an amendment originally introduced by the Democratic leader, former Speaker A. E. Smith, designed to confer on the legislature full power to enact a minimum-wage law. The former proposal proved objectionable on various grounds, and, despite the vigorous fight waged by Barnes to secure some adequate safeguard against "socialism," was killed by an adverse vote of 93 to 45; 40 Republicans and five Democrats supported Barnes, while 60 Republicans and 33 Democrats opposed him. The latter proposal came before the Convention on the last day before the revised constitution was committed to the committee on revision and engrossment and, despite the efforts of Barnes and the Democratic leaders, Wagner and A. E. Smith, to secure a roll-call, was talked to death with the approval of a majority of the Convention. In short, the majority of the Convention were unwilling to go on record as either favorable or opposed to a measure authorizing the legislature at its discretion to enact a minimum-wage law, and that evasive attitude was charac-

teristic of the majority with respect to the general class of measures associated in the public mind with the Progressive demand for social and industrial justice. The number of members willing to assume either a definitely reactionary attitude with Mr. Barnes or a definitely progressive attitude with Messrs. Wagner and A. E. Smith was strictly limited.

The Demands of Labor.—The attitude of the majority of the Convention towards so-called social-welfare measures betrayed the temper of the delegates towards most of the principal measures in the Progressive platforms of recent years. The New York State Federation of Labor presented a memorial to the Convention requesting favorable consideration for a score and more of proposed amendments, including the initiative, referendum and recall; popular election of all judges; abolition of party emblems from official ballots; separation of judicial from other public elections; jury trial in all criminal cases, including certain cases of contempt of court; annual election of senators; separate election of delegates to future constitutional conventions; abolition of capital punishment; the eight-hour day for all public employees; social insurance; a declaration that no acts of unions, which would be legal if committed by individuals, should be deemed criminal conspiracies, and that labor should not be deemed a commodity; and the prohibition of the exercise of jurisdiction over a civilian by any military tribunal while the regularly constituted state courts are open to administer justice. All these and several other proposals of organized labor were denied, for the most part being killed in committees. A few of the measures specially requested by the labor organizations were adopted, notably the proposals to extend the scope of the workmen's-compensation law, and to empower the legislature to deal with the sweating system in tenements. Other measures requested by labor were desired also by more influential interests, such as the increase of salary for members of the legislature, and were consequently more easily obtained. In general the Convention was frankly a conservative body, and its work must be estimated in accordance with the standards of conservatism.

The Revised Constitution.—As a conservative product, the revised constitution proposed by the New York Convention of 1915 must be accorded high rank. As Mr. Root proudly declared in his valedictory it was undoubtedly "a great departure in government." Judged simply by what it accomplished the Convention marked a new era in the making of state constitutions. In general, too, the Convention rose above the plane of partisan politics. As Mr. Root justly observed,

> All the great measures of this convention were adopted not only by the affirmative votes of a majority of the Republicans but by the affirmative votes of a majority of the Democrats in the Convention. The executive reorganization plan, commonly called the short ballot, was adopted by the votes of 97 Republicans in the affirmative and 16 in the negative, and of 28 Democrats in the affirmative and 15 in the negative. The budget, that great new departure in the finance of the state, was adopted by the affirmative votes of 101 Republicans and two Republicans in the negative and of 36 Democrats in the affirmative and two in the negative. The city home-rule bill was adopted by 102 Republicans voting in the affirmative and two in the negative, by 18 Democrats voting in the affirmative and 15 in the negative. . . . The judiciary bill . . . was adopted by the affirmative vote of 103 Republicans to one Republican in the negative and 32 Democrats to two Democrats in the negative.

Twelve of the 33 proposed amendments were adopted unanimously, 12 were adopted by majorities of more than ten to one, and the remaining nine by majorities ranging from more than seven to one to more than two to one.

But the New York Convention cannot be judged solely by what it accomplished. It is also necessary to take into account what it failed to accomplish. The very unanimity of its proceedings, so far as its main proposals are concerned, betrays one defect of its work. In order to conciliate opposition, great concessions were made. If the short ballot, budget, and home-rule proposals were not in their final form objectionable to many delegates, neither were they as attractive to many delegates as they might have been. The new de-

parture in state government, which the proposed constitution was designed to introduce, might have been much more pronounced, had fewer concessions been made to those opposed to any substantial reforms. Yet the concessions failed to remove the opposition. The blows dealt to "invisible government," though not heavy enough to arouse great enthusiasm among the enemies of boss rule, were too heavy to permit the "old guard" to give the new constitution any whole-hearted support. The Democrats were disaffected to no inconsiderable degree by the failure of the Convention to remove the discrimination against the city of New York in the apportionment of senators. The progressives of all parties were dissatisfied with the small measure of support accorded to their favorite projects. Yet the reactionaries had been disappointed in their efforts to secure a literacy test for the exercise of the suffrage, and had suffered a signal defeat in the struggle for an amendment to prevent the future enactment of class legislation, as they considered it, of the social welfare type. Organized labor was alienated by the refusal of the Convention to declare in clear and unmistakable terms the supremacy of the civil courts over the military. Though the leaders of the Convention attempted to divide the opposition by providing for the separate submission of two proposals, felt to be particularly objectionable in certain quarters, the tax-reform amendment and the apportionment amendment, they did not dare to adopt the practice followed by the Ohio convention of 1912, which permitted the people to vote separately on each proposed amendment. As Mr. Root candidly confessed in his valedictory, "any one of us . . . could have produced in the solitude of his own office a more perfect and harmonious scheme of government." The work of the Convention was certainly less objectionable for the things that were done than for those that were left undone. It was rejected by the electorate on Nov. 2 by a vote of 910,462 to 400,423.

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III. INTERNATIONAL RELATIONS

Charles Edward Asnis

INTERNATIONAL RELATIONS IN EUROPE

THE TRIPLE ALLIANCE

Italy's Position in the Triple Alliance.—The year 1915 marks the end of the famous Triple Alliance concluded more than 30 years ago. Under the terms of the last renewal treaty of Dec. 5, 1912, the alliance was extended until July 8, 1920. Italy, however, denounced the treaty on May 3 and entered the European War against her former ally, Austria-Hungary.

The alliance between Italy and Austria-Hungary was an unnatural one, although derived from reasons dating as far back as 1882. Historical reasons of a generation ago operated to draw Italy into the camp of the Central Powers. Fear and jealousy of France, the desire to expand as a Mediterranean power, the necessity for a long period of peace during which the newly-formed Italian nation might develop its internal resources, and the desirability of having the most powerful military nation in Europe, Germany, as an ally, all contributed to the conclusion of the anomalous alliance. To Italy it was a *mariage de convenance.* In recent years, however, it became apparent that the alliance served as a truce. The irritation with France was removed, the tension with the Papacy was relieved, the acquisition of Tripolitania, following the failure in Abyssinia, more than satisfied the Mediterranean ambitions of Italian statesmen, and Italy as a result of a long period of peace, emerged as a strong, unified power. The reasons for the alliance with Austria-Hungary no longer controlled. On the contrary, the causes of irritation and antagonism increased. Essentially the policies of Italy and Austria-Hungary are in direct conflict, the antagonism having its origin in the geographical and economic situation which places Italy in a position of great inferiority to her former ally, both in the Adriatic and on their common frontier. In these circumstances, it was clear that the relations between Italy and Austria-Hungary must be either that of allies or enemies. No intermediate relationship appeared possible. The great service of the Triple Alliance was in keeping these powers at arm's length, bound to keep the peace.

Italy's Interest in the Adriatic.—The configuration of the Adriatic is such that the power in possession of the east coast completely dominates the sea. The Italian coast line is open country and affords no shelter or refuge for Italian property and commerce. Strategic bases for attack or defense are few and the Italian naval arm is at a serious disadvantage for service within the sea. The east littoral of the Adriatic, on the other hand, is dotted with harbors and islands which are preëminently adapted for defense or attack. In the possession of a hostile navy, the entire Italian shore line would be rendered highly vulnerable. Ever since the Italian nation came forth as a power, her statesmen felt that national security rested on the correction of the decided superiority that Austria enjoyed. They saw that the only means of correcting the balance, or better still, of inclining it in Italy's favor, was to extend the frontiers so as to include the east shore of the Adriatic. The activities of Italy in Albania and her avowed interest in Serbia during the year 1915 are best understood in the light of her programme to reduce the Adri-

atic to an Italian lake. And her joint veto with Austria-Hungary against Serbia's occupation of an Adriatic port in 1913 (*A. Y. B.*, 1913, p. 102) expressed her determination not to allow another power to encroach on the other shore of the Adriatic.

Italy's Strategic Frontiers.—Italy is not only vulnerable on her Adriatic coast line, she is exposed to invasion on her northeastern frontier. The delimitation of the Italian-Austrian frontier is such that an Austrian wedge is ever cleaving into the very heart of northern Italy. The military situation in the Alps is exceedingly dangerous to Italian security. Italian advance is possible only at unusual sacrifice, whereas Austrian invasion can be accomplished under favorable circumstances. To correct this geographical disparity, Italian statesmen have always encouraged the movement generally known as *Italia irredenta*, the avowed object of which is to incorporate in the Italian monarchy territories in the Southern Tyrol and Trieste on the ground that they are largely inhabited by Italians. The movement has been exceedingly popular in Italy, and Italian Cabinets have always squared their policies with due regard to the popular demand; but while the ostensible purpose has been the reclamation of the so-called Italian territories, the real object is the correction of the unusually harsh frontier on the northeast.

Italy's Interest in the Balkans.—There is a third point of contact between the policies of the former allies. To stop further encroachment by Austria-Hungary in the Balkans, and especially on Serbia, is a corollary of Italy's policy in the Adriatic. Italy's interests demand that Austria-Hungary acquire no further hinterland on the Adriatic. It is upon this theory that Italy has vetoed the attempts of Austria-Hungary to crush Serbia. A strong Serbia would serve as a check to Austria-Hungary's progress along the hinterland of the Adriatic. At this point Russian and Italian interests in Serbia converge. Until the international crisis, Italy was cautious in her attempts to stop Austria-Hungary's advance in the Balkans. Her policy was that of compromise. In Albania the rivals operated jointly under a *noli me tangere* agreement, the development of which was that Albania was roughly divided into northern and southern spheres of influence, respectively Austro-Hungarian and Italian.

Italy's Attraction to the Entente Powers.—Signs were not wanting that in recent years Italy was a reluctant partner in the Triple Alliance. During the 30 years or more of her adherence, she had assiduously cultivated the friendship of Great Britain. Her statesmen found this policy advantageous because of the supremacy of British sea power in the Mediterranean. She leaned on Germany for her military arm, she inclined to Great Britain for naval protection. But time indeed wrought many changes. France and Italy soon composed their differences. In the war with Turkey, as a result of which she acquired Tripolitania, Italy owed much to both France and Great Britain. The latter in Egypt and the former in Morocco held the ring, keeping their Moslem subjects in complete control, while Italy gradually effected the isolation and reduction of the Turkish forces, secure from threats against land communications. Italy's ally, Austria-Hungary, on the other hand, hindered her operations against the Dardanelles and Saloniki. At the conclusion of the war Italy openly acknowledged her indebtedness to the power of the Entente.

In Berlin Italy's frank manifestations of friendship to the Entente group were interpreted as merely a *tour de valse* indulged in by a faithful ally. But Italy's allies were disillusioned at the Algeciras Conference, where she openly sided with France as against Germany. It then became clear to the Central Powers that their ally was indulging in something more serious than a flirtation. The affections of the Latin partner had been clearly alienated. In its *exposé*, the Austro-Hungarian *Red Book* takes note of Italy's "changeable attitude," and the statement is plainly made that fulfillment of treaty obligations by such a party could not be counted upon. It may be, therefore, seriously doubted whether Italy's coöperation was relied upon in Berlin and in Vi-

enna on the outbreak of the war, especially after her refusal to support Austria's proposed aggression on Serbia in August, 1913 (*A. Y. B.*, 1914, p. 97). The question was not one of coöperation, but one of neutrality.

The Documents in the Case.—Following the practice of the other belligerents, Austria-Hungary and Italy published "color books" in which are set forth the diplomatic correspondence and negotiations immediately preceding the entry of Italy into the war. The Austro-Hungarian *Red Book* and the Italian *Green Book* have unusual historic value. They contain information which had been carefully guarded for years. Ever since the Triple Alliance was announced to the world, there had been much speculation as to the contents of the famous pact, the exact stipulations that bound in amity and alliance such unnatural partners as Austria-Hungary and Italy. When allies of 30 years become foes, the natural outcome is the publication of data hitherto kept secret. Denunciation of a treaty of alliance adhered to for a generation, immediately followed by a declaration of war, requires more than explanation; it makes imperative the opening of the archives. The *Red Book* and the *Green Book* reflect the bitterness and the rancor that must have obtained for years; they reveal the unnatural basis on which the Triple Alliance was founded. The climax in the correspondence is reached when Italy demands, as compensation for her neutrality, the cession of territories presently belonging to her ally, the transfer to be immediate and irrespective of the ultimate results of the war.

The Articles of the Triple Alliance.—The *Red Book* is invaluable for the publication of three important articles of the Triple Alliance, as follows:

Article III. In case one or two of the high contracting parties, without direct provocation on their part, should be attacked by two or more great powers who have not signed this agreement, and should become involved in a war with them, the *casus fœderis* would at once arise for all the high contracting parties.

Article IV. In case a great power not a signatory of this agreement should threaten the national security of one of the high contracting parties, and the nation thus threatened should be forced thereby to declare war on that nation, the other two bind themselves to maintain a friendly neutrality toward their ally. Each reserves the right to take part in the war whenever it should deem it advisable to make common cause with its ally.

Article VII. Austria-Hungary and Italy, who have in view only the maintenance, in so far as it is in any way possible, of the territorial *status quo* in the Orient, bind themselves to use their influence against any territorial change which might be disadvantageous to one or another of the powers signing this agreement. For this purpose they will give each other explanations of their aims as well as those of other powers. If, however, the maintenance of the *status quo* in the Balkans or on the Ottoman coast and islands in the Adriatic and Ægean Seas should become impossible, and, either on account of action by a third power or in any other manner, Austria-Hungary or Italy should be obliged to change the *status quo* by temporary or permanent occupation on their part, then such occupation is to take place only after a previous agreement between the two powers, which is to be based on the principle of mutual compensation for all territorial or other advantages derived from either beyond the present *status quo*, and which is to be satisfactory to the interests and justified claims of both parties.

The controversy between the allies revolved around the interpretation of Article VII, particularly as to the phrases "*status quo* in the Balkans," "previous agreement," and "mutual compensation for all territorial or other advantages derived."

Cabinet Changes in Rome and Vienna.—The correspondence can be best understood in the light of the changes that took place in the Cabinets at Rome and Vienna during the course of the negotiations. In Italy Baron Sonnino became Minister of Foreign Affairs on the death of Marquis di San Giuliano, and in the Dual Monarchy Baron Burian succeeded Count Berchtold. These changes are reflected in the negotiations and have governed not only the contents but the policy of the "color books." The Austro-Hungarian *Red Book* is confined in the main to negotiations before the incumbency of Sonnino, while the Italian *Green Book* begins abruptly with a demand for compensation made by Sonnino on Dec. 9, 1914, entirely ignoring the negotiations begun by San Giuliano and the important period from August to December. The change

in the Austro-Hungarian Ministry of Foreign Affairs brought about an *impasse* in the negotiations, as will be shown later.

The Negotiations before Sonnino.— It is important to note the meagreness of material covering the first phase of the negotiations, namely the interval between the international crisis in July, 1914, to the peremptory demand for compensation by Sonnino, made in December, 1914. All the published correspondence on this important period is to be found in the *Red Book*, and even the Austro-Hungarian Government is cautious in covering this phase, for the *Red Book*, beginning with a lengthy *exposé* of the situation, dates its first correspondence July 25, 1914, and ends abruptly on Aug. 25, 1914, thus covering just one month. The period between Aug. 25 and Dec. 9, 1914, is apparently shunned by both Governments.

On July 25, 1914, Count Berchtold, the Austro-Hungarian Minister of Foreign Affairs, wrote to the Austro-Hungarian Ambassador at Rome as follows:

> The Italian Ambassador came here today and announced with regard to the conflict between the Monarchy and Serbia, that the Royal Italian Government, in case this conflict should reach the stage of war and lead to occupation of Serbian soil, even provisionally, would reserve the right to claim compensation under Article VII of the Triple Alliance. He also stated that the Royal Italian Government was, moreover, of the opinion that, according to the above mentioned article of the Alliance, we should come to an understanding with it regarding the possible occupation of Serbian territory. Beyond this, he continued, the Royal Italian Government contemplated maintaining a friendly attitude, in accordance with its Alliance obligations, in case of a war between Austria-Hungary and Serbia. (*Red Book*, No. 2.)

It is significant that in the entire correspondence only one document by San Giuliano, a dispatch of Aug. 2, 1914, is published, and that is set forth "in extract" in the *Red Book*. The Italian Minister of Foreign Affairs, while pressing for interpretation of Article VII of the Alliance with a view to compensation, was apparently conciliatory. He realized that after all the "present crisis" was temporary, "whereas the Triple Alliance must last 12 years and can be renewed." Even though his interpretation of Article VII were accepted by Austria-Hungary, he held, reasons would still exist for the neutrality of Italy during the war.

> Nevertheless, we hope that there will be an opportunity, without our participating in the war, of giving our allies proof of our upright, friendly sentiments, and we count, therefore, on a settlement which reconciles the interests of both of us. (*Ibid.*, No. 4.)

Although his Cabinet decided for neutrality, he suggested that the possibility of a decision more favorable to Italy's allies was not necessarily a remote one.

> But, whereas the *casus fœderis* cannot be invoked with regard to this war, the Cabinet yesterday evening decided upon neutrality, with the proviso that it might later on come to a decision more in accordance with the wishes of our allies, should this become our duty or should our interests make such a course imperative. (*Ibid.*)

The Austro-Hungarian contention that the negotiations between the Cabinets at Vienna and Rome on preliminary questions were "temporarily arranged" during San Giuliano's incumbency may, in the absence of proof to the contrary, be fairly admitted; and the statement that a new "direction" was given to the negotiations "when the conduct of the Kingdom's foreign affairs was transferred after the death of the Marquis di San Giuliano to Baron Sonnino" may, on the whole, be treated as a fair inference.

The *Red Book* scores heavily in setting forth a telegram of the King of Italy to the Emperor of Austria-Hungary, bearing the same date as San Giuliano's reported interview. Francis Joseph had sent a telegram to Victor Emmanuel in which he announced complete mobilization of Austro-Hungarian forces and expressed his belief that he could rely on the support of his ally. The reply of the Italian King was as follows:

> I do not need to assure your Majesty that Italy, who has done everything possible to keep the peace, and will do all in her power to restore peace, will observe toward her ally a thoroughly friendly attitude, in accordance with the terms of the Triple Alliance, her upright sentiments, and the great interests which she must protect. (*Ibid.*, No. 3.)

The date of the telegram lends color to the interpretation that it was more than a diplomatic amenity.

Two more dispatches complete the first phase of the negotiations. On Aug. 23, 1914, Count Berchtold accepted unreservedly the Italian interpretation of the expression *"dans les regions des Balcans"* in Article VII, not only in the present crisis but for the full duration of the agreement.

> This statement implies that we are ready, in case of the temporary or definitive seizure of territory in the Balkans, to enter into conversations with Italy on the question of compensation. (*Ibid.*, No. 6.)

The Austro-Hungarian Ambassador at Rome, to whom this dispatch was sent, reported that he had made the communication of acceptance verbally to San Giuliano. The most interesting passage in the entire *Red Book* follows. The Ambassador further reported that when the concession was communicated to San Giuliano,

> he seemed visibly pleased therewith, but said that in view of the present situation, there was yet scarcely the basis for a conversation. (*Ibid.*, No. 7.)

This was interpreted in Vienna as a satisfactory arrangement of the preliminary question of compensation, and the Viennese Cabinet made much of San Giuliano's reluctance to discuss compensation in contrasting it with Sonnino's peremptory demand for immediate cession of Austro-Hungarian territory, made three months later. Here again, it appears, the inference may fairly be drawn that during the first phase of the negotiations the differences between the allies were tentatively adjusted.

Sonnino Succeeds San Giuliano.—Whether the differences between the Allies would have been composed between San Giuliano and Berchtold will always be a debateable question. Certain it is that upon the succession of Sonnino on the death of San Giuliano, the negotiations took a new direction. Sonnino began his published correspondence with a demand upon Austria-Hungary for compensation under Article VII of the Triple Alliance.

> From this same article results, to the Austro-Hungarian Government, even for temporary occupations, the obligations of the previous accord with Italy and the obligation of compensations. (*Green Book*, No. 1.)

Sonnino based the necessity for immediate discussion and for a "concrete compact" on the possible "eventual political modifications in the Balkan peninsula" by reason of the impending invasion of Serbia. The right of compensation, he added, accrued to Italy on the "bare invasion of Serbia, although it should result in being only temporary," and he held with particular explicitness that for any advantage that Austria-Hungary might obtain in Serbia, even of a non-territorial character, such as political or economic, Italy was entitled to compensation. Berchtold replied that the occupation of part of Serbia was neither temporary nor permanent in character, but was only momentary, resulting from the inevitable consequence of military operations which were liable to cease from one moment to another (*ibid.*, No. 4). This distinction was not accepted by Sonnino, on the ground that it was "contrary to the spirit and to the letter of Article VII"; and he cited instances in the Italo-Turkish war when Austria-Hungary invoked Article VII to prevent the Italians "not only from temporary or momentary occupations but also from simple war operations like bombardments, without occupation" (*ibid.*, No. 6). Therefore, he held, what was applicable by Austria-Hungary when Italy was at war, has equal force when the former is engaged in war. At this point also Sonnino formulated the theory of a "preventive accord." The agreement must be preventive and not contemporaneous or consecutive to the invasion of Serbia. (*Ibid.*)

Berchtold Agrees to Discuss Compensation.—It took Count Berchtold about one week to yield, and the negotiations were well under way when he conceded on Dec. 20, 1914, the following stipulations insisted by Sonnino:

> 1. That between the maintenance of the integrity and independence of Serbia and her annihilation there was a large margin, which must form the object and basis of negotiations or an agreement between us and Austria-Hungary, according to the dispositions of the treaty.

2. That, according to the dispositions of the treaty, even partial, permanent and temporary territorial occupations, or whatever advantage of non-territorial character and even only of political influence or of economical privileges, must form an argument of previous agreement on the basis of compensations.

3. That the accord foreseen by the seventh article must be preventive and not contemporaneous and not consecutive to the fact or to the facts which give rise to the negotiations and to the agreement itself. (*Ibid.*, No. 7.)

The extent of Germany's participation in these negotiations would in itself form an interesting chapter. The fact is that at this stage Germany thought the situation serious enough to send its best diplomatist, Prince von Bülow, to Rome as special Ambassador, and conjecture is rife whether German advice preceded Austro-Hungarian concessions. It is a curious coincidence that on the same day, Dec. 20, that Berchtold yielded to Italy's propositions, Sonnino wrote to Duke Avarna, the Italian Ambassador at Vienna:

I received Prince von Bülow yesterday for the first time. He told me he had come to Italy with the intent better to explain in Berlin our present mental attitude and point of view, and better to explain here the point of view of Germany. He proposed to work for the betterment of the good relations and understanding between the two countries.

Before leaving Berlin he had received the news of the step we had taken at Vienna, invoking a discussion regarding Article VII of the Treaty of the Triple Alliance. He had said in Berlin that we had every right to demand that discussion regarding the compensations which were to accrue to us should Austria have obtained certain results. And he believed that this opinion of his had had its effect in Vienna also. (*Ibid.*, No. 8.)

Sonnino Demands Austro-Hungarian Territory.—With the ground thus laid for the fulfillment of compensations, Sonnino proceeded to the core of the controversy, the principle that the basis for such compensation must be Austro-Hungarian territory. Nothing short of the cession of her ally's territory would satisfy Italy's national aspirations; a "durable condition of friendship" between the allies could only be arrived at when the irredentist formula of 'Trento and Trieste' could be completely eliminated." To discuss the eventual cession of territory of some other country would, in itself, be a breach of neutrality. The possibility of Albania, as compensation, would not relieve the situation, which, Sonnino contended, was "propitious for the elimination of constant frictions and misunderstandings," for Italy had but a negative interest in Albania, namely, that of preventing any other power from going there. Confronted with the grave possibilities that lay in the cession of Austro-Hungarian territory, Sonnino replied that in great crises national surgery may be attempted and that considering the general and international situation it might be advisable to perform the amputation.

The correspondence is clear that at this stage nothing short of the irredentist formula of "Trento and Trieste" would satisfy Sonnino. It was von Bülow who first recognized the necessity of approaching the formula, and in an interview of Jan. 11 he suggested to Sonnino the cession of the Trentino as the price of Italian neutrality (*ibid.*, No. 11). Sonnino, however, was immovable, and the suggestion of Albania by the Austro-Hungarian Ambassador at Rome in an interview immediately following that of von Bülow met with the same reception. Sonnino declined to discuss Albania in so far as it was offered as a substitute to "Trento and Trieste."

Burian Succeeds Berchtold.—The succession of Baron Burian to the Austro-Hungarian Ministry of Foreign Affairs and his assumption of the negotiations with Sonnino brought in a new element, which not only called a halt to the progress of the negotiations, but, when they were resumed largely through the intercession of Germany, served to create an *impasse* from which the negotiators appeared unable to extricate themselves.

Sonnino soon found that much of the ground that had been laid by von Bülow and Berchtold for an amicable adjustment of the situation was taken away and that factors were introduced which not only retarded the negotiations but finally disrupted them. Burian approached the Italian propositions cautiously. He soon engaged in a period of diplomatic sparring, asserting that he was devoting his time to "studying" Article VII and in examining the Italian demands

before he could discuss them. It was von Bülow who sought to fill in the gap. He urged Sonnino to come to a practical conclusion in regard to the negotiations with Austria-Hungary relative to the application of Article VII by indicating precisely what the Italian Government wanted. Sonnino replied that he would not formulate Italy's precise demands until Vienna conceded the principle that the basis of compensation should be the cession of territory now possessed by Austria-Hungary.

But Burian soon intimated that cession of Austro-Hungarian territory was impossible. He was ready to accept in principle the Italian demand for compensation, but as to the cession of his Government's territory, the sacrifice was held to be too great. He got in touch with the German Government and after conversations with the Imperial Chancellor and with Herrn von Jagow and Zimmerman, he informed the Italian Ambassador at Vienna that he had convinced the German Government completely as to the difficulties entailed in the cession of Austro-Hungarian territory, and that it had promised to intercede with Italy and recommend "moderation and prudence" (*ibid.*, No. 16). All this, however, made for delay in the negotiations. Burian declined to propose anything definite, pleading for time to examine the matter calmly. Even von Bülow inquired of Sonnino for news from Burian. Sonnino was plainly discouraged:

> I told him that all this is very discouraging for one who desired an accord, since Baron Burian, after having gotten into power, if not exactly on account of this question, at least with a full knowledge of it, and after having visited the German headquarters and having talked over this question with Emperor William and the German Government, to-day has nothing else to tell us except that he needs more time to examine it calmly. (*Ibid.*, No. 17.)

There was a silence of almost two weeks between Rome and Vienna. When Burian finally broke the silence, the effect of his position was to introduce with reference to the matter of compensation an entirely new factor. Austria-Hungary was willing to discuss compensation, but Italy must concede that compensation is also due to Austria-Hungary by reason of the former's occupation of Valona and of islands in the Ægean.

Burian's Counter-Proposals. — The intentions of Burian in submitting counter-proposals at this important stage of the proceedings are subject to various inferences; their effect was to encumber the discussion and to make an adjustment almost impossible. In sum, Burian's first definite step was to ask compensation of Italy, basing his contention on the very provision of the Triple Alliance that Italy herself invoked. In a lengthy memorandum submitted on Feb. 12, he set forth the Italian occupation of the Dodekanese in the Ægean Sea during the Italo-Turkish War and the temporary occupation of Valona by Italian troops during the present war; and contended that from the fact of these occupations alone, Austria-Hungary was entitled to an accord based on the principle of compensation as provided in Article VII. In the opinion of Burian these principles of compensation might now be invoked by both allies:

> It thus seems to be evident that if the Government is willing to discuss, at present, the compensations to which the article in question would give it right in the case of a future Austro-Hungarian occupation, and in this instance uncertain, the Austro-Hungarian Government could ask in its turn with stronger reasons the discussion of compensations which are already due it through the fact of the prolonged occupation of the Dodekanese on the part of Italy. (*Ibid.*, No. 21.)

The principle of compensation invoked was reciprocal; if Italy insisted on compensation in the present crisis, she must acknowledge a past indebtedness to Austria-Hungary which arose out of advantages secured in the Italo-Turkish War.

> Summing up what precedes the Austro-Hungarian Government is of the mind that the conversation so happily engaged then between Austria-Hungary and Italy on the subject of compensations may be continued still more usefully, if they might also bear upon the question of compensations to be given to Austria-Hungary for the Italian occupation of the Dodekanese and for the Italian occupation, were it only temporary, of Valona. (*Ibid.*)

Sonnino Withdraws Proposals and Vetoes Invasion of Serbia.—The effect of Burian's memorandum was the

withdrawal of all proposals previously made by Italy. Sonnino pointed out that Italy's operations in the Turco-Italian War were greatly impeded by the attitude of Austria-Hungary, particularly in the veto to bombard the Dardanelles and Saloniki on the ground that the equilibrium in the Balkans would be endangered; and further that Austria-Hungary based its refusal on the very article by reason of which she now claimed compensation of Italy. Moreover, Count Berchtold had expressly waived the matter of compensation by Italy.

> In the face of such an attitude persistently dilatory toward us, it is no longer possible now to nourish any illusion about the practical issue of the negotiations. Thus the Royal Government finds itself constrained for the protection of its own dignity, to withdraw every one of its proposals or initiatives for discussion, and to entrench itself in the simple interpretation of Article VII, declaring that it considers as openly contrary to the very Article whatever military action Austria-Hungary would make from now on in the Balkans, be it against Serbia, against Montenegro or others, without there being the preliminary agreement asked for in Article VII. (*Ibid.*, No. 22.)

Sonnino not only withdrew his proposals but he also served notice that the invasion of Serbia would be interpreted as an open violation of the stipulations of the Triple Alliance, thereby giving Italy complete justification to resume her full liberty of action, relieved of any provision of the Alliance.

"Previous Agreement."—The wording of Sonnino's communication to Burian, however, gave the latter an opportunity to prolong the negotiations. In effect, the Italian Government refused to recognize an Austro-Hungarian invasion of Serbia "unless a previous agreement has been formulated as to compensations, in accordance with the text and provision of Article VII" (*ibid.*, No. 26). Article VII, it will be recalled, provides that temporary or permanent occupation by Austria-Hungary or Italy in the Balkans or on the Ottoman coasts and islands in the Adriatic and the Ægean seas, may take place

> only after a previous agreement between the two powers, which is to be based on the principle of mutual compensation for all territorial or other advantages derived.

The controversy now entered the field of construction, and an expression which had been used and frequently renewed for more than 30 years by the allies was now given by each a separate and distinct meaning. Burian's interpretation of the expression "previous agreement" was that preliminaries for an agreement might be begun before military operations were instituted, but the extent of the agreement could be determined only after the military operations had developed, at which time the allies could determine and weigh the advantages that Austria-Hungary had derived (*ibid.*, No. 27). Sonnino contended that the agreement must be begun and concluded before Austria-Hungary could undertake an invasion in Serbia; for, if Burian's interpretation held, then Austria-Hungary, after having completed her military operations in the Balkans and secured the "coveted advantages," would be free "to quibble indefinitely" with Italy on the matter of compensation (*ibid.*, No. 28). Sonnino was careful to show that Germany supported his interpretation of "previous agreement." Both Chancellor von Bethmann-Hollweg and Herr von Jagow were quoted by the Italian Ambassador at Berlin as admitting Italy's interpretation of the treaty that agreement should have been complete (*erfolgt*) and executed (*vollkommen*) before initiating military operations.

The prolonged discussion soon discouraged Sonnino. Reports from the Italian Ambassador at Vienna showed that the negotiations were leading to no definite end. Duke Avarna was clearly no match for Burian, or Burian appeared to be courting a denunciation of the treaty by Italy. Whatever the explanation, the negotiations were directed into an *impasse*. Early in March Sonnino wrote to Avarna that there was nothing further to hope from a continuation of the discussion with Burian; and to the end that discussion might be cleared of all uncertainty from the Italian viewpoint, he summarized the situation as follows:

> 1. No military action of Austria-Hungary in the Balkans can be undertaken previous to the conclusion of an agreement on compensations, as we abide rigorously by the text of Article VII.

2. Any violation of the aforesaid will be considered by us as an open violation of the treaty, on account of which Italy resumes its entire liberty of action to guarantee its own rights and interests.

3. No proposal or discussion of compensations can lead to an agreement unless it contemplates the cession of territories already possessed by Austria-Hungary.

4. According to Article VII, we demand compensations for the mere fact that a military action of Austria-Hungary is started in the Balkans, independently from the results that such an action may bring; not excluding, however, that other compensations may be stipulated in a conditional way in proportion to the actual advantages that Austria-Hungary may succeed in obtaining.

5. The compensations fixed for the beginning of military operations independently of the results, rather than remaining secret, will take actual effect by means of the effective transfer of territories ceded and their immediate occupation on the part of Italy.

6. We do not consent in any discussion of compensations on our part for the occupation of the Dodekanese and of Valona, and this for the various reasons already stated to Baron Burian by your Excellency. (*Ibid.*, No. 35.)

Germany Intervenes.—In Berlin it was now felt that the negotiations would come to an abrupt end unless Vienna conceded the Italian propositions. It was at this stage therefore that German diplomacy intervened, seeking to placate the one ally while it brought pressure to bear on the other. German diplomacy concentrated on the vital question that separated the allies, the cession of territory already possessed by Austria-Hungary. This question always lurked in the background of the negotiations, was ever pressed by Sonnino, and continually postponed by Burian.

On March 8 von Bülow informed Sonnino that his Government had strongly intervened at Vienna, "to favor an understanding between Austria-Hungary and Italy," and he was assured that at last the attitude of Vienna was changed and "that there was well-founded hope that such understanding could be brought to a consummation" (*ibid.*, No. 38). The next day the German diplomat was more explicit.

> Baron Burian has requested us to notify the Italian Government that Austria-Hungary is ready to enter into negotiations with Italy, according to the proposal of Baron Sonnino and on the basis of cession of Austrian territory. (*Ibid.*, No. 39.)

From Berlin the Italian Ambassador communicated the same information (*ibid.*, No. 40), and on the same day (March 9) Burian himself informed Rome that he was ready to discuss the question of compensations on the basis of cession of territories belonging to his Government.

The principle of cession of Austro-Hungarian territory conceded, Sonnino insisted on immediate cession as a *sine qua non* of the beginning of the discussion, whereas Burian maintained the cession should not be made until after the conclusion of peace, because the immediate transfer of territory might provoke a revolution at Vienna. Prince von Bülow supported Burian in this respect, and he informed Sonnino that he was morally certain that aside from the conditions of the immediate execution, an accord could be reached between the allies in regard to the territorial question. Here occurs the most significant passage in the entire correspondence. The Prince informed Sonnino in an interview on March 15 that he was convinced that an agreement could be reached "unless you have already decided to make war within March" (*ibid.*, No. 46).

Germany Offers to Guarantee Cession.—Prince von Bülow sought to bridge over this difficulty by offering to guarantee the cession of Austro-Hungarian territory on conclusion of peace; he informed Sonnino that, the accord concluded, Italy could have the high guarantee for its execution of the Emperor of Austria-Hungary and of Germany as a mediator approving the accord. Several days later (March 17) von Bülow suggested the guarantee of the Emperor of Germany. On March 20 he presented a formal offer of guarantee, informing Sonnino on instructions of the German Chancellor,

> of having the authority to declare that the German Imperial Government assumes before the Italian Royal Government the full and entire guarantee that the agreement to be concluded between Italy and Austria-Hungary will be put into execution faithfully and loyally immediately after the conclusion of peace. (*Ibid.*, No. 49.)

But Sonnino was not to be persuaded. He was impressed with the uncertainty of the war and with the pos-

sible contingency of the Central Powers being in a position not to perform their agreement.

> I would like to believe that Austria victorious would faithfully maintain at the end of the war the agreement which, in a way, would have helped her to win; but it is contrary to human nature for the Austrian people, and with it the Parliament, on the day in which they should emerge from the war defeated, and should give up some provinces to the victor, not to oppose the cession of other territories to a party that has not taken part in the struggle, and when the facts would show that his non-participation has not sufficed to secure a happy termination of the war. The guarantee of Germany is valuable in the case of a victorious Germany, which presupposes also a victorious Austria, but would have less value in case both should be defeated. (*Ibid.*, No. 53.)

Burian Makes Definite Proposals.—Not until March 24, after months of diplomatic sparring and delay, did Burian indicate that he was in a position to submit to Italy "precise and concrete proposals." On condition that Italy would be bound to neutrality to the end of the war, and would allow Austria-Hungary complete liberty of action in the Balkans, Burian would agree on behalf of his Government "to a cession of territories in the southern Tyrol including the city of Trent" (*ibid.*, No. 56). This was the extent of Austria-Hungary's concessions after months of negotiations, and in consideration of this, Italy must renounce in advance any compensation for territorial or other advantages that might eventually accrue to Austria-Hungary. As to Albania, where Italy was known to have great interests and future ambitions, Burian was explicit to say that it was excluded from the concessions. Burian further fettered his offer with numerous commercial, financial and ecclesiastical conditions and stipulations. It was clear that the Austro-Hungarian Minister of Foreign Affairs had either misread Italian intentions or had held them cheaply. Not only was he vague and indefinite as to the extent of the cession, but the conditions which he imposed were in themselves calculated to invite a refusal.

Sonnino replied that the offer was inadequate, that it completely ignored the irredentist programme, and overlooked the necessity of correcting the frontiers between the two states and of securing greater equality in the Adriatic. Burian soon saw the necessity of being more specific in his concessions and on April 2, he submitted a memorandum as follows:

> The territories which Austria-Hungary would be disposed to cede to Italy under the conditions indicated would include the districts (*politische bezirke*) of Trento, Rovereto, Riva, Tione (with the exception of Madonna di Campiglio and of its environs), as well as the district of Borgo. In the Valley of the Adige, the frontier would go as far up as the locality of Lavis, which would be assigned to Italy. (*Ibid.*, No. 60.)

This offer was equally unacceptable to Sonnino, because it excluded a number of Italian districts in the Trentino, such as the whole side of the Valley of Noce, the Val di Fasso, and the Val di Ampizzo, "leaving us a boundary which did not correspond in any way to strategical requirements" (*ibid.*, Annex 2).

Sonnino's Final Demands.—On April 8, Sonnino set forth his final propositions in full. In the Trentino the new boundaries were to be those which the Italian realm had in 1811, after the Paris Treaty of Feb. 28, 1810. On the frontier toward the Isonzo, the ceded territory was to include the cities of Gradisca and Gorizia. The proposed boundary beginning at Troghofel turned eastward to the Osternig, through the Carnic Alps to Saifniz, thence through the counter fort between Seisera and Schliza to Wirschberg, and then along the present boundary to the slopes of Nevea, descending the spur of the Rombone to the Isonzo. The Isonzo was to be followed until Tolmino, where the line was to continue to the east of the upland of Pregona-Planina, then to the east of Gorizia and across the Corso di Comen to the sea between Montefalcone and Trieste in the neighborhood of Nebresina. Trieste was to be constituted an autonomous and independent state. Its territory was to be extended northward until it comprised Nebresina, so as to meet the new Italian boundary, and to the south until it comprised the judicial districts of Capo D'Istria and Pirano. Austria-Hungary was also to cede the Curzolari Islands, comprising Lissa (with the near-by little islands of S.

Andrea and Busi), Lesina (with the Spalmadori and Torcola), Curzola, Lagosta (with the near-by little islands and reefs), Cazza, Meleda, besides Pelagosa. Italy was to occupy the new territory at once, and Austria-Hungary was to withdraw immediately her authorities and troops from Trieste. As to Albania, Austria-Hungary was to renounce completely every interest, and was to acknowledge full Italian sovereignty over Valona and her bay, including Sasseno. Complete amnesty and immediate release of all persons convicted and prosecuted for military and political reasons within the ceded districts were to be conceded by Austria-Hungary. Italy was to pay the sum of 200,000,000 lire in gold for the freeing of the ceded territories from the obligation of the Austro-Hungarian public debt, and as compensation for all rights in said territories. Italy was to bind herself to a perfect neutrality during all of the present war and to renounce all rights or further compensation under Article VII of the Triple Alliance. Austria-Hungary was to make the same renunciation as to Italian occupation of the Dodekanese.

These were more than mere demands of the moment, presented because the opportunity was favorable. They represented the traditional aspirations of Italy ever since she became a nation. The demands are not genuinely territorial or ethnographic; they are military and strategic. The Trentino and Trieste formula was, of course, insisted upon; but the delimitation traced by the Italian Foreign Minister in the southern Tyrol and in the district of the Isonzo has significance when viewed in their military character. Ethnography is the prayer, but security is the purpose. The demand of the Curzolari Islands, for instance, is the traditional desire to reduce the "painful condition of inferiority" in which Italy finds herself in the Adriatic. This, when coupled with the demands of Austro-Hungarian disinterestedness in Albania, together with the recognition of Italian possession of Valona, necessarily involves mastery of the Adriatic. When the Trieste demand is added, the Adriatic has become, for strategic purposes, an Italian lake. The demands, then, were an epitome of Italian strivings of two generations. Sonnino saw that the Triple Alliance had run its course, and he pressed his case and characterized his demands as indispensable to create between the two states a "normal and durable relation of mutual cordiality and of possible future coöperation."

The Fall of the Triple Alliance.—The fate of the Italian demands was a foregone conclusion. Burian replied that his Government found them unacceptable. He was willing perhaps to yield in the southern Tyrol, but in other respects he was obliged to acknowledge, "with deep regret," that for "ethnographic, political, strategic and economic reasons" the Italian propositions were unacceptable. To detach Trieste from the Dual Monarchy would deprive it of its most important centre of maritime traffic; to cede the Curzolari Islands would be to make Italy mistress of the northern Adriatic. The negotiations had now run their course and the Allies were soon to assume the rôles of foes.

On May 3, Italy declared herself no longer bound by the Triple Alliance. It would be useless for Italy to keep up a formal appearance of alliance, when her ally obstructed the long-sought opportunity of realizing her geographical aspirations. Further postponement would only intensify the distrust and irritation that inevitably characterized their relations. To disguise their true relationship was no longer possible.

> That is why Italy, confident in her good right, affirms and proclaims that from this moment, May 3, she resumes her entire freedom of action and declares her treaty of alliance with Austria-Hungary to be void and henceforth of no effect. (*Ibid.*, No. 76.)

After the denunciation of the Triple Alliance, and after the negotiations had ceased, Austria-Hungary made a final offer, presented directly to the Italian Government through Prince von Bülow and the Austro-Hungarian Ambassador at Rome, which covered the following points:

> The cession of the Italian portion of southern Tyrol.
>
> The cession of the district inhabited by Italians west of Isonzo.

As to Trieste, the establishment of a university, the grant of the designation of Imperial Free City and the revisions of the municipal statute so as to maintain the present autonomy and guarantee to the town an Italian character; the continuation and possible widening of the free port zone. Readiness to recognize the full sovereignty of Italy over Valona and surrounding territory.

Relinquishment by Austria-Hungary of political interest in Albania.

Renunciation of all claims that might be brought forward by Austria-Hungary regarding the Italian occupation of the Dodekanese. (*Red Book*, Exposé.)

But if this final offer was seriously made, it was not seriously entertained. Italy's hand had already been forced, and she had probably pledged herself to the Entente group. Italy dismissed her former ally's offer as in no sense approaching the minimum demands of the final propositions, and on May 23 declared that she considered herself in a state of war with Austria-Hungary from May 24.

THE BALKANS

Bulgaria Joins the Central Powers. —The entry of Bulgaria on the side of the Central Powers and Turkey may be accounted Germany's greatest diplomatic achievement since the entry of Turkey. In Berlin, in Vienna and in Constantinople, the adhesion of Bulgaria was heralded as bringing about the last phase of the war. Whatever the ultimate effect, it is clear that the immediate results were incalculable to the Teutonic forces and detrimental to the cause of the Allies.

The decision of Bulgaria may be traced to the Treaty of Bucharest, the final chapter of the second Balkan War, in which Bulgaria was reduced almost to a geographical expression by the simultaneous invasion of Greek, Serbian and Rumanian armies. In the capital of Rumania, Bulgaria was compelled to yield to the combined demands of her Balkan neighbors and to sign a humiliating treaty whereby she was stripped of valuable territory conquered by her armies from the Turks. Every Balkan country profited at her expense. Rumania got the Dobrudja district; Greece retained Saloniki and was awarded the Kavalla district; Serbia received Macedonia (*A. Y. B.*, 1913, p. 98 ff.). Even Turkey participated in the spoils, though not represented at Bucharest, when her armies crossed the Maritza and recaptured Adrianople and the important railway line that leads from that city to the Ægean. Serbia, Greece and Rumania were indeed the victors, but the allied Balkan statesmen in their desire to extend the frontiers of their respective countries failed to make a durable peace. At best, the treaty was an armed truce, and Bulgaria served notice that she yielded to *force majeure*, and that she would wait for "happier days."

Bulgaria was apparently reconciled to the loss of the Drama-Kavalla districts but she was implacable on the loss of Macedonia, principally held by Serbia. Bulgaria's bitterness was increased because of Serbia's alleged violation of the *ante-bellum* treaty which in anticipation of the defeat of the Turks roughly divided the spoils. Macedonia, it was clearly stipulated, was to go to Bulgaria. But when Serbia was denied "her window" on the Adriatic, she thought better of her *ante-bellum* treaty and sought to make up her loss in Macedonia (*A. Y. B.*, 1913, p. 99). Bulgaria complained that by the Treaty of Bucharest she was deprived of a population of 1,250,000 which was either Bulgarian before the war or lived in regions occupied by her troops during the war, Macedonia alone containing at least 500,000 Bulgars who were compelled to live under Serbian rule.

The appeal of *Bulgaria irredenta* was an ever present danger to the peace of the Balkans, and in the factors that brought about this appeal lay the elements for a third Balkan war. Bulgaria was determined not only to recover Macedonia but to drive a wedge between Greece and Serbia and to take away for all time the common frontier of her enemies. Her opportunity came when Russia was driven from the Carpathians and when the Allied attack on the Dardanelles ended in failure. It is doubtful whether Allied diplomacy could have placated Bulgaria, although it brought pressure on Serbia, Greece and Rumania to give up some portion of their conquests. To satisfy Bulgaria completely, there needed the

tearing up of the treaty of Bucharest, which was out of the question to the Balkan statesmen.

Bulgaria's adhesion to the cause of the Central Powers was foreshadowed by the cession by Turkey of land along the Maritza River. The importance to Bulgaria of this cession lay in acquiring the Lypitmetz-Adrianople-Dedeagatch railway whereby she could have ready access to her only port of consequence on the Ægean, Dedeagatch. The territory ceded is along the west bank of the Maritza River and includes the railway station at Adrianople. From this station, the border runs to the town of Sufla, about 1¼ miles on the west side of the Maritza, and thence along the west shore of the river to the sea. On Sept. 1, the Bulgarian Foreign Office issued this statement to the Associated Press in which it outlined its plans:

> Now, as heretofore, the Bulgarian Government is guided by three factors:
> First, the non-acceptance of the Treaty of Bucharest, which was not ratified by the National Assembly, and which is not acceptable to Bulgaria so long it remains unrevised.
> Second, the unwillingness of the Bulgarian people to engage in a war the outcome of which is at all doubtful.
> Third, the absolute necessity of convincing the Bulgarian people that whatever action is undertaken for a result to be achieved will be such that no betrayal afterward will be possible.

The entry of Bulgaria was preceded by a Russian ultimatum in which an appeal was made to Slavic community of interests. Bulgaria was reminded that Russia, which "is bound to Bulgaria by the imperishable memory of her liberation from the Turkish yoke, cannot sanction . . . preparations for fratricidal aggression against a Slav and allied people." But Bulgaria determined that her political and economic interests were bound with the Central Powers and cast her destiny with them, and thereby supplied the last link in the all-land route from Berlin to Constantinople to the Persian Gulf.

From Berlin to Bagdad.—This formula voices the hopes and aspirations of Germany. A late arrival in the family of nations, she found that most of the available colonies of the world were already in the possession of her rivals. Germany's "place in the sun," despite apparent indications, was not in Africa or South America but in Asia Minor. All her energies were bent toward expanding in that region. The Bagdad Railway is an indication of Germany's foresight in providing an avenue of communication to the Persian Gulf. In Austria-Hungary she found not only a friend but a collaborator, and in Turkey she found a willing ally. Her plans were checked by the elimination of Turkey as a power in Europe, and the Balkan wars created two new barriers, Serbia and Bulgaria. The significance of the adhesion of Bulgaria to the policies of the Teutonic nations may readily be seen when it is considered that thus the gap between Austria-Hungary and Turkey was bridged. Northern Serbia alone blocked the way for complete communication, but that obstruction was soon removed.

The economic aspects of the inclusion of a friendly Bulgaria and a conquered Serbia in the Teuton plan of communication with Turkey are far-reaching. An all-land economic unit is thus roughly outlined, bound by a community of economic interests. The significant feature is that it not only thwarts sea power but is independent of it. In Berlin, the achievement was hailed as the beginning of an economic super-Empire bound not only by political considerations but by economic needs. The *Hamburger Fremdenblatt* pictures the achievement as follows:

> A united commercial sphere will stretch from the North Sea to the Persian Gulf and as far as the frontiers of India, and the rich products of the soil of Asia Minor, especially corn and cotton, can find their way to the Central Powers without England's fleet being able to prevent it. This, however, means the final collapse of the English scheme of shutting Germany and Austria-Hungary off from all the raw products of the world.

The immediate strategic importance of an all-land route to Turkey has been great enough to win an important campaign for the Central Powers. It also foreshadows an attack on Great Britain's important colonies, Egypt and India; and an attempt to seize the Suez Canal, familiarly called the "windpipe of Brit-

ish Commerce." Not only is Constantinople for the immediate future lost to the Allies, but the withdrawal of most of the Allied troops from the Gallipoli Peninsula, besides seriously tarnishing the prestige of the Allies, liberated a large Turkish army for operations elsewhere. German-made munitions of war may now be sent in large quantities to Turkish troops, and their potential value realized to the full by German officers. Whether Germany can rely on Asia Minor for supplies of cotton, copper, oil, etc., as is confidently claimed, remains to be seen.

In the final peace negotiations, the destiny of Serbia will be the greatly contested point. In any event, the Central Powers will insist that northern Serbia, at least, be incorporated in their economic unit, for the Danube must be kept open, if their all-land route to the East is to prevail. Above all, the territorial continuity must be kept intact. To Germany this would be more important than the retention of Belgium.

Greece's Dilemma.—The entry of Bulgaria and the invasion of Serbia by Teuton-Bulgar forces produced a profound effect on Greece and Rumania. The repercussion was particularly strong in Greece. Her problem was that of Belgium, to resist with all its forces the Teuton-Bulgar invasion of its neighbor and ally or to remain neutral. Despite the ascendancy of King Constantine, Greece would have fought on the side of Serbia if the proper precautions had been taken. It was not the question of promises and of their sufficiency. Promises Greece had in plenty,—Smyrna, the west coast of Asia Minor, the islands in the Ægean, Cyprus. What Greece wanted and wanted badly was military coöperation of the Allies, and she insisted that such support must be present and active and not in the future. Greece refused to stake her destiny on one campaign; she had before her the fate of Belgium and visions of the fate of an unsupported Serbia. Allied diplomacy failed miserably in the crisis. It urged that Greece proceed in advance of Allied support which, it was promised, would be forthcoming, and it blundered in its attempt to placate Bulgaria with concessions. Greece, Serbia and Rumania all knew that if Bulgaria was to be kept neutral it could be done not by concessions but by force; all three urged the active military coöperation of the Allies. Greece asked for territorial integrity, and Allied diplomacy demanded that she should amputate herself. The result was that Bulgaria went over to the enemy, Serbia was crushed, and Greece and Rumania paralyzed into neutrality, although the former was pledged to aid Serbia against Bulgaria. The eclipse of Venizelos was due, not to the stubbornness of King Constantine, but to the colossal blundering of the diplomatists of the Allies. They sacrificed their staunchest friend when they neglected to support him with a large army at Saloniki. The situation was used by Constantine to great advantage; he pointed out to his subjects the fate of Belgium and the impending collapse of Serbia, which he intimated was due to lack of Allied military support. The King's attitude was made clear in an interview with a correspondent of the Associated Press on Dec. 4:

> Certainly, it [the Balkan Allied expedition] is doomed to failure if undertaken with no more men than are now there or on the way. Great Britain does not seem disposed to send an adequate force; and France cannot do the job alone. The minimum army that can hope to accomplish anything in the Balkans is 400,000 men. As that number is not being sent, that is my proof that it is Greece that must suffer—Greece that must pay for the failure of the Allied Balkan venture.

Lurking in the background of the diplomatic contests in Athens and in Bucharest was the realization by the Balkan statesmen that prestige and power were with the Central Powers. The collapse of Russian arms and the failure of Anglo-French forces at Gallipoli had their effect. The inference was that Teuton power was ever present, whereas that of the Allied group was still in the future.

Rumania.—Rumania's position was in most respects similar to that of Greece. The key to Rumania's position is her territorial aspirations. She covets territory presently owned by belligerents on both sides. She would have Transylvania and Buko-

wina in Austria-Hungary, and Bessarabia in Russia she has always considered as a lost province. She would also hold on to the Dobrudja wrested from Bulgaria in the second Balkan war. Naturally her sympathies are with the Allies, and Allied diplomacy had on its side one of the strongest of Rumanian statesman in M. Jonescu. But the drama in Athens was reënacted in Bucharest. As Greece asked for Anglo-French coöperation, Rumania requested Russian aid. But the best Rumania could get were promises and an urgent request that she strip herself of the Dobrudja and help placate Bulgaria. Jonescu was deserted in Bucharest, as Venizelos was deserted in Athens. Allied diplomacy insisted on placating the implacable.

The entry of Bulgaria served to strengthen Rumania's desire to help the Allies, for a victorious Bulgaria meant the loss of Rumanian hegemony in the Balkans, meant also the reclamation of the Dobrudja by Bulgaria, and the hopelessness of ever disentangling Transylvania from Austria-Hungary. But until Russian coöperation in large numbers is forthcoming, the best that the Allies can hope or expect of Rumania is a benevolent neutrality.

INTERNATIONAL RELATIONS IN THE FAR EAST

CHINA AND JAPAN

Japanese Policy and Its Triumph.—The greatest event of the year in the Far East is the treaty between China and Japan signed on May 25. It is easily the most important event of the decade in the Orient, comparable in its results with the Chino-Japanese War and the Russo-Japanese War. Its real significance is clouded by the conflagration that is raging in Europe, and for that reason its true proportions have not as yet been gauged. But certain it is that the treaty negotiations could not have received the full attention of the chancelleries of Europe, and that a divided Europe gave Japan a clear field. The far-reaching significance of the treaty will be understood only when peace is restored; then the Powers will find that Japan has attained to a position of paramountcy in Chinese affairs.

The treaty is the natural result of Japan's position in relation to the continent of Asia. It is the outcome of the geographical and economic forces that obtain in the relations between the two great countries. The recent industrial development of Japan foreshadowed her *démarche*. The realization that she was fast approaching the limit of her resources, the knowledge that her rapidly growing population was ever pressing on the margin of her surplus resources, the consciousness that the heavy burden of taxation on her people could be lifted only by the increase of her wealth elsewhere, and the necessity of seeking new fields in which the great energy of her people could have an outlet along agricultural and economic lines, all combined to direct her policy to the continent. And the continent meant China. The treaty is a résumé of Japan's national policy. In it she seeks to correct by convention what geography and economic resources have denied her. Never was her policy given freer scope; never were greater results achieved. A victorious war could not have obtained greater concessions. The result is that Japan has committed herself to the working out of "spheres of influence" in four sections of China,—Shantung, South Manchuria, Eastern Inner Mongolia, and Fukien. In addition, she is assured of invaluable concessions, political and economic, which easily place her in a position of predominancy in China.

Japan's Demands on China.—Unexpectedly on Jan. 18, the Chinese Government was confronted with 21 demands presented by the Japanese Minister at Peking. They were classified in five groups; each of the first four were preceded by a preamble, but to the fifth group, which was the cause of widespread discussion and which Japan eventually withdrew in most particulars, there was no preamble or introduction. In these appeared a carefully studied expression of Japan's policy with refer-

ence to China, an epitome of Japan's economic programme on the continent. The occasion for their presentation was the conquest of Germany's colony at Kiao-chau in the Province of Shantung (*A. Y. B.*, 1914, pp. 98, 166). Germany removed, Japan turned to China, forced concessions which affected not only Shantung but several other provinces as well, and presented other demands which abroad were interpreted as affecting the integrity and sovereignty of China, the treaty rights of other powers, and the principle of equal opportunity. The reasons ascribed by Japan for her course of action are worded as follows:

> First, to endeavor to dispose of the complications arising out of the war between Japan and Germany, and secondly, to attempt to solve various questions which are detrimental to intimate relations of China and Japan with a view to solidifying the foundation of cordial friendship subsisting between the two countries, to the end that the peace of the Far East may be effectually and permanently preserved.

The negotiators went into conference on Feb. 2, and on April 17 the Japanese representatives suspended the negotiations, although China made concession after concession. On April 26 they presented a new list of demands, 24 in number, which were called "revised demands" and which were pressed for immediate acceptance without modification. The subject matter of the "revised demands" was the same as that of the original demands. Considering, then, the original demands in group form, they may be roughly characterized as follows: the first group relates to Shantung; the second, to South Manchuria and Eastern Inner Mongolia; the third, to the Hanyehping Company; the fourth, to non-alienation of the coast of China; and the fifth, to questions of national advisers, national police, national arms, missionary propaganda, Yangtse Valley railways and the Province of Fukien.

Group I: The Shantung Demands. —In presenting the demands relating to Shantung, Japan proceeded on the theory that on the expulsion of Germany from the Province of Shantung, she succeeded to all the rights, privileges and concessions previously enjoyed by Germany. The group reads as follows:

> The Japanese Government and the Chinese Government being desirous of maintaining the general peace in Eastern Asia and further strengthening the friendly relations and good neighborhood existing between the two nations agree to the following articles:
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> Article 1. The Chinese Government engages to give full assent to all matters upon which the Japanese Government may hereafter agree with the German Government relating to the disposition of all rights, interests and concessions, which Germany, by virtue of treaties or otherwise, possesses in relation to the Province of Shantung.
>
> Article 2. The Chinese Government engages that within the Province of Shantung and along its coast, no territory or island will be ceded or leased to a third power under any pretext.
>
> Article 3. The Chinese Government consents to Japan's building a railway from Chefoo or Lungkou to join the Kiao-chau-Chianfu Railway.
>
> Article 4. The Chinese Government engages, in the interest of trade and for the residence of foreigners, to open by herself as soon as possible certain important cities and towns in the Province of Shantung as commercial ports. What places shall be opened are to be jointly decided upon in a separate agreement.

Two interesting points are involved in this group. First, Japan appears to disregard the fact that British arms coöperated with Japan in the reduction of German fortresses at Kiao-chau; second, that although Japan claims to be the successor of Germany, she demanded concessions much more extensive than Germany herself enjoyed.

China, at the very first conference, agreed in principle to the first article of this group, but made the following supplementary proposal:

> The Japanese Government declares that when the Chinese Government give their assent to the disposition of interests above referred to, Japan will restore the leased territory of Kiao-chau to China, and further recognizes the right of the Chinese Government to participate in the negotiations referred to above between Japan and Germany.

This proposal, China urged, was in accordance with the statement made by the Japanese Premier on Aug. 18, 1914 (*A. Y. B.*, 1914, p. 99), and given great publicity, that on the expulsion of Germany from Shantung, Japan would take up the question of its restoration to China. China further proposed that Japan assume the responsibility for indemnification of

the losses arising out of the military operations by Japan in and about the leased territory of Kiao-chau, and asked for the restoration of the *status quo ante bellum* in Shantung as to such matters as the maritime customs, the telegraphs and post offices, and the removal of the railway and telegraph lines, etc., installed by Japan to facilitate her military operations. The other articles of this group were conceded by China at the sixth conference on March 3.

The viewpoints of the negotiating countries in reference to Shantung are interesting. China desired to participate in the peace conference between Japan and Germany because Shantung is a Chinese province and she is the most concerned in the future disposition of that territory. Japan pressed her demands without modification or concession, because she wanted above all to prevent Germany from ever recovering her influence either in that province or in Asia and from ever becoming "a source of disturbance in the Far East."

Group II: Manchuria and Inner Mongolia.—This group may be interpreted as an attempt by Japan to consolidate her interests in South Manchuria, obtained as a result of the Russo-Japanese War, and to extend them into a new direction, Eastern Inner Mongolia. The demands were as follows:

The Japanese Government and the Chinese Government, since the Chinese Government has always acknowledged the special position enjoyed by Japan in South Manchuria and Eastern Inner Mongolia, agree to the following articles:

Article 1. The two contracting parties mutually agree that the term of lease of Port Arthur and Dalny and the term of lease of the South Manchurian Railway shall be extended to the period of 99 years.

Article 2. Japanese subjects in South Manchuria and Eastern Inner Mongolia shall have the right to lease or own land required either for erecting suitable buildings for trade and manufacture or for farming.

Article 3. Japanese subjects shall be free to reside and travel in South Manchuria and Eastern Inner Mongolia and to engage in business and manufacture of any kind whatsoever.

Article 4. The Chinese Government agrees to grant to Japanese subjects the right of opening the mines in South Manchuria and Eastern Mongolia. As regards what mines are to be opened, they shall be decided upon jointly.

Article 5. The Chinese Government agrees that in report of the (two) cases mentioned herein below the Japanese Government's consent shall be first obtained before action is taken:

(*a*) Whenever permission is granted to the subject of a third power to build a railway or to make a loan with a third power for the purpose of building a railway in South Manchuria and Eastern Inner Mongolia.

(*b*) Whenever a loan is to be made with a third power pledging the local taxes of South Manchuria and Eastern Mongolia as security.

Article 6. The Chinese Government agrees that if the Chinese Government employs political, financial or military advisers or instructors in South Manchuria or Eastern Mongolia, the Japanese Government shall first be consulted.

Article 7. The Chinese Government agrees that the control and management of the Kirin-Changchun Railway shall be handed over to the Japanese Government for a term of 99 years dating from the signing of this Agreement.

China yielded on the extension of the leases of Port Arthur and Dalny and of the railways after a "painful effort," and thus abandoned "its own cherished hopes to regain control of these places and properties at the expiration of their respective and original terms of lease." As to the right of "opening all mines," the Chinese Government pointed out that such a concession tended to create a monopoly for Japanese subjects, was clearly inconsistent with the principle of equal opportunity, and seriously infringed on treaty rights of other powers. Japan eventually agreed that nine mining areas be designated for exploitation by her subjects.

The question of inland residence and of leasing and owning land was the cause of much discussion. To extend these privileges would entail the extension of rights of extra-territoriality to a large alien population, which China was loath to do, for she feared that eventually she would lose jurisdiction over a large area of her territory. Further, the privileges demanded were interpreted by the Chinese Government as an extension to Japanese subjects of a privileged status beyond the terms of the treaties existing between the two nations and therefore a serious infringement on China's sovereignty and her administrative rights. All these demands also were clearly op-

posed to the principle of equal opportunity. China yielded in many particulars, revising her counter-proposals five or six times, and went so far as to agree that all civil and criminal cases between Chinese and Japanese should be arranged according to existing treaties, but that cases relating to land or lease contracts were reserved to be adjudicated by Chinese courts as a mark of China's sovereignty. All these concessions, however, were unacceptable to Japan.

Eastern Inner Mongolia is a new sphere for Japanese expansion. Japan's interest in this territory is probably the result of Russian activities in Outer Mongolia (see *The Status of Mongolia, infra*), and is impelled by a desire to check further Russian progress eastward. The name, Eastern Inner Mongolia, is, in the language of the Chinese Government, "a new expression in Chinese geographical terminology" and there was some difficulty in determining its boundaries. China objected to the granting of privileges in this territory on the ground that the region is unenlightened and unaccustomed to foreign trade and that the Government would feel much anxiety concerning the safety of foreigners. She proposed, however, the opening of commercial markets in the interest of foreign trade.

Group III: The Hanyehping Company. — The Hanyehping Company controls the Hanyang iron works, the Pinghsiang coal mines and Tayeh iron works; and Japan's immediate interest in it is explained by the fact that it already dominates its financial existence by loans, contracts and other obligations. On this subject the Japanese demands read:

> The Japanese Government and the Chinese Government, seeing that Japanese financiers and the Hanyehping Company have close relations with each other at present and desiring that the common interests of the two nations shall be advanced, agree to the following articles:
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> Article 1. The two contracting parties mutually agree that when the opportune moment arrives the Hanyehping Company shall be made a joint concern of the two nations and they further agree that, without the previous consent of Japan, China shall not by her own act dispose of the rights and property of whatsoever nature of the said Company nor cause the said Company to dispose freely of the same.
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> Article 2. The Chinese Government agrees that all mines in the neighborhood of those owned by the Hanyehping Company shall not be permitted, without the consent of the said Company, to be worked by other persons outside of the said Company; and further agrees that if it is desired to carry out any undertaking which, it is apprehended, may directly or indirectly affect the interests of the said Company, the consent of the said Company shall first be obtained.

The second article was objectionable to China because its effect would be to grant a monopoly of mining in two provinces. The Tayeh mine is in Hupeh, and the Pinghsiang coal mine is in Hunan. It was pointed out that the Japanese demand practically amounts to a monopoly of extensive mining operations in the provinces of Hupeh and Hunan, which is clearly in violation of China's treaty obligations to other powers and seriously affects the principle of equal commercial opportunity.

Group IV: Non-Alienation of Territory.—Group IV comprised the following single article:

> The Japanese Government and the Chinese Government with the object of effectively preserving the territorial integrity of China agree to the following special article:
>
> The Chinese Government engages not to cede or lease to a third power any harbor or bay or island along the coast of China.

China objected to this demand on the ground that it was a serious infringement of her sovereign rights. She agreed, however, to make a voluntary pronouncement that she would not alienate any portion of her coast line. This appeared to be acceptable to Japan, for in the revised demands the following is required:

> China to give a pronouncement by herself in accordance with the following principle: no bay, harbor, or island along the coast of China may be ceded or leased to any power.

Group V.—The demands in Group V caused so much discussion in China and abroad that eventually Japan was compelled to withdraw them and seriously revise them. As originally presented they read:

> Article 1. The Chinese Central Government shall employ influential Japanese as advisers in political, financial and military affairs.

Article 2. Japanese hospitals, churches and schools in the interior of China shall be granted the right of owning land.

Article 3. Inasmuch as the Japanese Government and the Chinese Government have had many cases of dispute between Japanese and Chinese police which caused no little misunderstanding, it is for this reason necessary that the police departments of important places (in China) shall be jointly administered by Japanese and Chinese or that the police departments of these places shall employ numerous Japanese, so that they may at the same time help to plan for the improvement of the Chinese police service.

Article 4. China shall purchase from Japan a fixed amount of munitions of war (say 50 per cent. or more of what is needed by the Chinese Government) or that there shall be established in China a Sino-Japanese jointly worked arsenal. Japanese technical experts are to be employed and Japanese material to be purchased.

Article 5. China agrees to grant to Japan the right of constructing a railway connecting Wuchang with Kiukiang and Nanchang, another line between Nanchang and Hangchau, and another between Nanchang and Chaochaufu.

Article 6. If China needs foreign capital to work mines, build railways and construct harbor-works (including dock yards) in the Province of Fukien, Japan shall be first consulted.

Article 7. China agrees that Japanese subjects shall have the right of missionary propaganda in China.

The Chinese Government was emphatic in its refusal to discuss these demands, on the ground that "they all infringe China's sovereignty, the treaty rights of other powers or the principle of equal opportunity." From the very beginning, it submitted that the group could not even be made the basis for an understanding and it refused to negotiate on any of the articles of the group. As to Fukien, China was ready to state that no foreign money was borrowed to construct harbor work in the province. As to joint policing, Japan receded and explained that this referred to South Manchuria only and that it would be satisfied if China agreed to engage Japanese as police advisers for that region. To this China agreed. The objection to privileges for Japanese schools, churches and hospitals was based on the reluctance to extend the right of extra-territorality over great areas of China, applicable to scattered groups of foreigners who might create trouble in domestic affairs. As to religious propaganda, the point was made that the religions of the negotiating countries are practically identical and there appeared no need for missionary work on the part of the Japanese. China scored heavily in its objections to railway concessions in the Yangtze Valley. She pointed out that Japan's demands were in direct opposition to the vested interests of her ally, Great Britain. They conflicted with the Shanghai-Hangchau-Ningpo Railway agreement of March 6, 1908, with the Nanking-Changsha railway agreement of March 31, 1914, and with the engagement of August 24, 1914, giving preference to British firms for the projected line from Nanchang to Chaochaufu.

The Revised Demands.—On April 17, after 24 conferences, the Japanese Ambassador notified the Chinese Government that the negotiations would be suspended. There was a lapse until April 26, when the Japanese Government presented its revised list of demands. In the main, they did not differ in substance from the original demands, but appeared to be modified in expression so as to comply with the many Chinese concessions. There were, however, some notable changes. The expression "special position" in the preamble to the Manchurian Group was changed to "economic relations"; four additional demands were introduced with reference to Eastern Inner Mongolia. There was a radical change in Group V, the character of the articles being changed from demands to a recital of alleged statements by the Chinese Foreign Minister. The questions of the right of preaching and those relating to police and the ownerships of sites for temples were withdrawn for future discussion. The demands as to the South China railways were modified in some cases so as to read "if it is clearly ascertained that other powers have no objection, China shall grant the said right to Japan," and as to others, "the Chinese Government shall not grant the said right (of financing) to any foreign power before Japan comes to an understanding with the other power which is heretofore interested therein." The requirement as to Fukien, however, was substantially repeated.

Upon presentation of these demands, the Chinese Government was requested to accord their acceptance without delay. The Japanese Minister also stated that his Government would restore the leased territory of Kiao-chau to China at an opportune time in the future and under proper conditions, if the Chinese Government would agree to the new list of 24 demands without modification.

China's Reply.—On May 1 the Chinese Minister of Foreign Affairs read a memorandum to the Japanese Minister, stating in detail China's position. China's conciliatory attitude was reviewed by reciting the number of concessions. The memorandum, however, did not accept the revised demands without modification. In the first four groups China appeared to yield everything but the second article in the Hanyehping Group and one demand in regard to Eastern Inner Mongolia. She resisted concessions in Group V on the ground that they infringed on her sovereignty, the treaty rights of other powers and the principle of equal opportunity. She still pressed for the retrocession of Kiao-chau, the indemnification for losses caused to Chinese citizens by Japan's military operations, and the restoration of the *status quo ante bellum* in Shantung; and she desired to participate at the future peace conference to be held between Japan and Germany. The question of inland residence in South Manchuria and unreserved right of leasing or owning land, also remained unsettled to the satisfaction of Japan. The Japanese Minister expressed himself dissatisfied with China's reply, and withdrew the conditional offer to restore Kiao-chau to China.

The Ultimatum.—On May 7 Japan delivered an ultimatum to China demanding compliance on May 9. The document interpreted China's counter proposals concerning Kiao-chau as demands that could not be tolerated; characterized the statements of the Chinese negotiators as "empty talk"; and considered the reply of the Chinese Government "vague and meaningless." The much discussed demands in Group V (with the exception of those relating to Fukien) were detached from the present negotiations to be discussed separately in the future.

> Therefore, the Chinese Government should appreciate the friendly feelings of the Imperial Government by immediately accepting without any alteration all the articles of Groups I, II, III and IV and the exchange of notes in connection with Fukien Province in Group V, as contained in the revised proposals presented on the twenty-sixth of April.

China Yields.—China accepted the ultimatum the next day, "with the hope that thereby all outstanding questions are settled, so that the cordial relationship between the two countries may be further consolidated." A statement, however, issued from the Chinese Government in which the course of the negotiations was recited in detail. Its attitude in the negotiations in refusing to yield to all the demands is characterized as an attempt to maintain its "plenary sovereignty, the treaty rights of foreign powers in China, and the principle of equal opportunity." The impression is sought to be made that China yielded to *force majeure* in the interests of peace and that she was impelled by a desire to avoid "unnecessary suffering" of the Chinese people. In accepting the ultimatum, China is careful to say that she voluntarily took no part in the revision of existing treaties and conventions with other nations.

Significance of the Treaty.—The Japanese demands thus became a treaty; and the important question raised is whether the treaty will stand unchallenged after peace in Europe is restored. The treaty will then undergo a careful examination to determine whether it infringes in important respects upon the various conventions and agreements concluded with other powers. The attitude of the United States is interesting. While the negotiations were pending, the Government of the United States submitted an identic note to the Government of China and the Government of Japan, informing them that it would not recognize any agreement which would impair its treaty rights or the integrity of the republic of China. The note to China reads:

> In view of the circumstances of the negotiations which have taken place and which are now pending between the Gov-

ernment of China and the Government of Japan and of the agreements which have been reached as a result thereof, the Government of the United States has the honor to notify the Government of the Chinese Republic that it cannot recognize any agreement or undertaking which has been entered into or which may be entered into between the Governments of China and Japan impairing the treaty rights of the United States and its citizens in China, the political or territorial integrity of the Republic of China, or the international policy relative to China commonly known as the Open Door policy.

The Japanese Government was not unheedful of criticism in Europe and America. On May 8, the day after the ultimatum, Count Okuma gave out the following statement:

> The motives and subjects of our negotiations with China are to meet the requirements of the altered conditions caused by the war with Germany and to bring closer relations with China by removing all causes of misunderstanding and thus to insure a permament Oriental peace.

He further stated that Japan's attitude had been deliberately misrepresented by German interests and that such misinformation was scattered broadcast in America.

THE STATUS OF MONGOLIA

The Chino-Russo-Mongolian Treaty.—On June 7 the representatives of Russia, China and Outer Mongolia, signed a treaty relating to the status of Outer Mongolia and to the rights of Russian and Chinese citizens in that region. An autonomous state is created, known as Outer Mongolia, with a ruler designated as Khan, whose title, however, is conferred by the President of the Republic of China. The treaty provides that Russia and China recognize the autonomy of Outer Mongolia, forming part of Chinese territory; and that Outer Mongolia recognizes the suzerainty of China. Although autonomous, Outer Mongolia has no right to conclude international treaties with foreign powers respecting political and territorial questions. China and Russia, conformably to the Chino-Russian declaration of Oct. 23, 1913 (*A. Y. B.*, 1913, p. 109), recognize the right of Outer Mongolia over its internal affairs and administration, also the right to conclude with foreign powers treaties and agreements concerning questions of commercial and industrial nature. As to customs duties, Chinese goods imported into Outer Mongolia are to be entitled to the same treatment as Mongolian goods, and reciprocally, Mongolian goods are to be accorded the same privileges when imported into China. Chinese goods entering Outer Mongolia from the north are to receive the same treatment as Russian goods. As to court jurisdiction, cases involving Chinese and Mongolians are to be tried by the defendant's court, and the law of the defendant's court is to apply. Assessors of the plaintiff's nationality may watch the case. As between Chinese and Russians, where Chinese are defendants, the cases are tried in Chinese courts in the presence of Russian assessors, and the judgment is to be signed by judge and assessors; where Russians are defendants, the court is Russian, Chinese representatives may watch the proceedings, but they have no voice in the judgment.

The treaty is apparently a compromise. Mongolian aspirations for an autonomous state are satisfied, Russian fear of Chinese infiltration in Siberia is allayed by the creation of a buffer state, and China retains some show of prestige by having her suzerainty recognized. Russia, however, has succeeded in opening a new region for penetration eastward.

INTERNATIONAL RELATIONS OF THE UNITED STATES[1]

MEXICO

A New Mexican Policy.—Conditions in Mexico during 1915 reached the stage where a policy of watchful waiting would no longer avail (see IV, *Mexico*). In Washington it was recognized that the revolution against Huerta had succeeded, that the continued disorders were the results of differences among the revolutionists themselves, and that unless moral support were given to one group, end-

[1] Exclusive of relations with belligerents in Europe, which are treated in Department I, *American History*.

less anarchy would ensue. Early in June, therefore, President Wilson notified the warring factions, particularly the Carranzistas and the Villistas, that they must come to a speedy settlement of their differences, and that the United States was prepared to lend its support to that group which was best capable of bringing order out of chaos.

Still, the Administration was loath to deal with the situation single-handed. It was already committed to the policy of consultation and conference with reference to Mexican affairs with the nations of Central and South America. Moreover, it was thought good policy to disarm criticism of interference in the internal affairs of a Latin-American nation, and to allay wherever possible the widespread suspicion that the United States was bent on territorial aggrandizement. Resort to a Pan-American conference had already been had in the case of Huerta (*A. Y. B.*, 1914, p. 72), and while the A. B. C. conference was lacking in tangible results, the Administration was determined to do nothing with reference to Mexico without the advice and approval of the Latin-American nations.

Hence the Administration invited the coöperation of six of the republics, twice the number concerned in the A. B. C. conference, the purpose of the increase being to give the new conference wider representation and particularly to secure participation in the proceedings by a nation of Central America.

The Pan-American Conference.—The invitation was sent to the diplomatic representatives at Washington of Brazil, Argentina, Chile, Bolivia, Uruguay and Guatemala, these being the representatives of Central and South America who have been longest in Washington. By its terms the deliberations of the proposed conference were not to represent the joint action of the conference nations, and the conclusions were to be not the joint policy of the nations represented, but the policy of each of them, severally and independently. The United States was thus placed in a position of having the moral and active support of Latin America of any programme that might be agreed upon. The object of the conference was to formulate plans for a provisional Government for Mexico which would eventually be recognized by all elements. The immediate plan was to issue an appeal to the warring factions to compose their differences and to invite them to participate in a general peace conference. The invitations to the Pan-American Conference were issued in June, and in August the Conference met. After the first session, Secretary Lansing issued the following statement:

> We have assented or agreed to a proposition that a communication should be addressed to the different factions in Mexico, appealing to them to compose their differences. We also have agreed upon the form we will recommend to our respective Governments with reference to the recognition of a government in Mexico.

The Conference soon agreed upon the text of the appeal to be sent broadcast throughout Mexico. It was understood, however, that the Conference would not go further than "diplomatic intervention."

Carranza's Warning.—The Conference was soon confronted with the same difficulty that obstructed the programme of the conference at Niagara Falls a year before. Unless Carranza agreed to participate in the peace conference the proceedings must inevitably fail. Although Mexico was rent into factions, he represented the strongest party in all Mexico, and showed that he, more than any other leader, had the "material and moral capacity to protect the lives and property of nationals and foreigners." The conferees were not long in learning of Carranza's attitude. He steadfastly refused to participate in any conference which would in any way thwart the success of the Constitutionalist party of which he was the head. He characterized the conference as an unwarranted attempt at interference in the internal affairs of a "sister nation," and he averred that this and other conferences must fail in their attempts at regulating the domestic affairs of another country.

To the United States he addressed the following communication:

> The Constitutionalist Government represented by Mr. Carranza . . . considers it its duty to inform the American Gov-

ernment of the displeasure with which the Mexican Government and people would view any act which would tend to frustrate the success practically accomplished against the reactionary factions by the Constitutionalist army, representing the hopes and ideals of the Mexican people.

To the representatives of the Latin-American nations he was equally emphatic. He warned them of the dangerous precedent which they were about to undertake, and declared that any attempt to solve the internal affairs of Mexico

would involve an act which could not be looked upon with levity, as it would mean on the part of Latin-American nations the acceptance of the precedent that they can take part in any internal affairs of a sister nation, with the cooperation of the United States, something absolutely undesirable not only in so far as it may affect the relations between Latin-American nations themselves but also because it might involve the moral support of any future decisions which grow out of similar conferences.

It is interesting to note that the assurance of non-interference came from a sister Latin-American nation. The Minister of Foreign Affairs of Argentina replied that the conference was guided by the traditional policy of respect to other sovereign nations.

The above mentioned conference has been based from its incipiency on the understanding that any act or design which might mean an interference in the internal affairs of Mexico should be eliminated beforehand, and above all any purpose of armed intervention. . . . The Washington conference obeys a lofty inspiration of Pan-American solidarity and instead of finding any cause for alarm, the Mexican people should see in it a proof of their friendly consideration that her fate evokes in us and calls forth our wishes for her pacification and development.

The Appeal.—Notwithstanding Carranza's warning, the appeal to all the Mexican factions was sent out by the Conference. It was addressed not only to the leaders but to their subordinate generals and to all officials, civil and military; it was telegraphed to the American Consular and other agents throughout Mexico for delivery to the political and civil leaders in their respective communities, and the widest possible publicity was given to the communication among all classes of the population. Over the signatures of the Secretary of State of the United States and of the representatives in Washington of the six coöperating republics, the text of the appeal was as follows:

Inspired by the most sincere spirit of American fraternity, and convinced that they [the signatories] rightly interpret the earnest wish of the entire continent, they have met informally at the suggestion of the Secretary of State of the United States to consider the Mexican situation so as to ascertain whether their friendly and disinterested help could be successfully employed to re-establish peace and constitutional order in our sister republic.

In the heat of the frightful struggle which for so long has steeped in blood the Mexican soil, doubtless all may well have lost sight of the dissolving effects of the strife upon the most vital conditions of the national existence, not only upon the life and liberty of the inhabitants, but on the prestige and security of the country. We cannot doubt, however—no one can doubt—that in the presence of a sympathetic appeal from their brothers of America, recalling to them these disastrous effects, asking them to save their motherland from an abyss—no one can doubt, we repeat, that the patriotism of the men who lead or aid in any way the bloody strife will not remain unmoved. No one can doubt that each and every one of them, measuring in his own conscience his share in the responsibilities of past misfortune and looking forward to his share in the glory of the pacification and reconstruction of the country, will respond, nobly and resolutely, to this friendly appeal and give their best efforts to opening the way to some saving action.

We, the undersigned, believe that if the men directing the armed movements in Mexico—whether political or military chiefs—should agree to meet, either in person or by delegates, far from the sound of cannon, and with no other inspiration save the thought of their afflicted land, there to exchange ideas and to determine the fate of the country—from such action would undoubtedly result the strong and unyielding agreement requisite to the creation of a provisional government, which should adopt the first steps necessary to the constitutional reconstruction of the country and to issue the first and most essential of them all, the immediate call to general elections.

An adequate place within the Mexican frontiers, which for the purpose might be neutralized, should serve as the seat of the conference, and in order to bring about a conference of this nature the undersigned, or any of them, will willingly, upon invitation, act as intermediaries to arrange the time, place and other details of such conference, if this action can in any way aid the Mexican people.

A reply was requested in ten days, but there was no hint of intervention

or alternative action in the event of refusal. The Conference adjourned to convene later when the replies were forthcoming. Practically all of the Mexican chieftains agreed promptly, but there was an ominous silence from the Carranzistas.

Carranza's Attitude.—As in the case of the A. B. C. Conference at Niagara Falls, the military situation in Mexico played an important part. Carranza was concerned more with the military operations of his opponents than the peaceful sessions of the Pan-American Conference. He knew that armed intervention was out of the question and that the furthest the Conference could go would be "diplomatic intervention." His purpose was to eliminate the strongest opposing faction, headed by Villa, march into Mexico City, confront the Conference with *fait accompli*, and demand recognition. Undoubtedly Carranza had the key to the military situation in Mexico, as well as the diplomatic situation that confronted the Conference.

The Recognition of Carranza. — When the Conference met again in September to consider the replies to its appeal, no word had been received from the leading element in Mexican politics. On the contrary, Carranza's agency in Washington reiterated his decision not to participate. There was no alternative for the Conference but to adjourn and convene again in October. They saw that Carranza was growing in military strength and that as affairs were going he would soon eliminate Villa and gain complete ascendancy. They were reconciled to his forthcoming control of Mexico City and they adumbrated their expectancy by letting it be known that they were prepared to recognize that faction which possessed the "material and moral capacity necessary to protect the lives and property of nationals and foreigners," and that the party which proved to be the strongest physically and morally would be supported. This designation undoubtedly applied to Carranza. When in October the conference was confronted with Carranza's control of Mexico City and the elimination of Villa, it realized that if it failed to recognize Carranza, there remained but two alternatives, more watchful waiting for an indefinite time, or armed intervention. The conference made a virtue of accomplished facts and decided to recognize the man who alone obstructed the carrying out of its programme. At the conclusion of the October sessions, the conferees published their intention to recognize Carranza by issuing the following announcement:

> The conferees after careful consideration of the facts, have found that the Carranzista party is the only party possessing the essentials for recognition as the *de facto* Government of Mexico and they have so reported to their respective Governments.

This was followed by a statement by Secretary Lansing on Oct. 18 as follows:

> The conferees under instructions from their several Governments will recognize to-morrow the *de facto* Government of Mexico of which General Carranza is the chief executive.

Each of the conferees thereupon addressed a letter to Eliseo Arredondo, the confidential agent of Carranza at Washington, notifying him of the recognition of his chief. This was followed by an American embargo on arms and munitions designed to prevent the arming of the enemies of Carranza. There remained the assurance of the Carranza faction that life and property would be protected by the *de facto* Government, and this was forthcoming by a letter from Arredondo as follows:

> The Constitutionalist Government will respect everybody's life, property and religious belief without other limitation than the preservation of public order and the observance of the institutions, in accordance with the laws in force and the constitution of the republic.

On Dec. 9 Arredondo was appointed Mexican Ambassador to the United States. This was soon followed by the appointment of Henry P. Fletcher as American Ambassador to Mexico. Thus diplomatic relations were restored between the two nations after a lapse of two and a half years. The recognition of Carranza by the conference Governments was soon followed by recognition of other Latin-American Governments and by the leading nations of Europe.

President Wilson's Pan-Americanism.—In his message at the opening

of the Sixty-fourth Congress in December, President Wilson reviewed the settlement of the Mexican problem and enunciated his doctrine of Pan-Americanism as follows (see also IV, *Latin America*):

> Whether we have benefited Mexico by the course we have pursued remains to be seen. Her fortunes are in her own hands, but we have at least proved that we will not take advantage of her in her distress and undertake to impose upon her an order and government of our own choosing. . . .
>
> The moral is, that the states of America are not hostile rivals but coöperating friends, that their growing sense of community of interest, alike in matters political and alike in matters economic, is likely to give them a new significance as factors in international affairs and in the political history of the world. It presents them as in a very deep and true sense a unit in world affairs, spiritual partners, standing together because thinking together, quick with common sympathies and common ideals. Separated, they are subject to all the cross currents of the confused politics of a world of hostile rivalries; united in spirit and purpose, they cannot be disappointed of their peaceful destiny.
>
> This is Pan-Americanism. It has none of the spirit of the empire in it. It is the embodiment, the effectual embodiment, of the spirit of law and independence and liberty and mutual service.

HAITI

American Intervention. — Disorder and bloodshed marked the internal situation of Haiti during the year. (See IV, *Haiti.*) A crisis was reached in July, when conditions necessitated the landing of American marines. The seizure of the customs houses in all ports and their administration by American officials soon followed. Washington announced, however, that the administration of Haitian customs was temporary and was rendered necessary to prevent the revenues from falling into irresponsible hands, and declared further that no permanent supervision would be undertaken unless sanctioned by treaty. When order was restored, American officials supervised the national election, at which General Dartiguenave was elected President. On Aug. 25 Secretary Lansing issued the following statement with reference to the Haitian situation:

> We have only one purpose—that is, to help the Haitian people and prevent them from being exploited by irresponsible revolutionists. These are not properly revolutions; they are unorganized enterprises which invoke no question of principle and they are ruining the country. While they are in progress people are starving in the streets of Port au Prince because they cannot secure the supplies of food which abound in the country. Things have been going from bad to worse, and something must be done.
>
> The United States Government has no purpose of aggression and is entirely disinterested in promoting this protectorate. We have not even asked for Mole St. Nicholas. The arrangement, of course, would have to be considered by the United States Senate for approval.

The Protectorate Treaty.—The arrangement referred to by the Secretary of State resulted in a treaty whereby the United States assumed a financial protectorate over Haiti. In scope, however, the treaty is more than financial; it has aspects of political control of Haitian affairs. The treaty provides for an establishment of a receivership under American control over Haitian customs. The scope of supervision is extended so as to include not only the distribution of funds for payment of foreign debts but also the expenditure of the balance of receipts for domestic purposes. The significance of this extended supervision lies in the fact that the finances of Haiti with reference to the running of the Government are entirely in the control of the United States. By the exercise of this power of the purse, it is hoped to remove all incentive for those revolutions which have for their object a raid on the treasury. The treaty also provides for a state constabulary of natives under control of American officers. By control of the state police, the United States is placed in a position to maintain order and to reduce to a minimum the possibility of armed intervention. The treaty is to remain in force for a term of ten years. Upon its ratification by the Haitian Congress, a temporary arrangement was made to govern the protectorate until the ratification of the treaty by the Senate of the United States. By this arrangement the treaty is presently in operation in all its aspects under a *modus vivendi* signed by the American Minister and the Haitian Secretary of Foreign Affairs.

INTERNATIONAL PEACE AND ARBITRATION

JAMES L. TRYON

The League to Enforce Peace.—From the point of view of principles the most significant event in the organized peace movement of America in 1915 was the formation of the League to Enforce Peace. Initiated in January in New York by a group of publicists, it took shape in a convention which met in Philadelphia on June 17. William H. Taft was elected president, Herbert S. Houston, treasurer, and William H. Short, secretary; A. Lawrence Lowell, president of Harvard University, was made chairman of the executive committee. The headquarters of the American branch of the League, which is expected to become an international society with national units, are at 70 Fifth Avenue, New York. The League to Enforce Peace believes it to be desirable for the United States to join a league of nations which shall assemble in conference to enact international law, use a court to apply the law to the settlement of justiciable questions, and create a council of conciliation to give advice upon non-justiciable questions when they cannot be settled by negotiation. But to public opinion, which hitherto has been generally recognized by American advocates of peace as the most feasible sanction of international law for the present age, the members of the League, who do not propose a world-state, but, in the words of Mr. Taft, are trying to follow "a middle and practical path," have added economic and military force. The application of force, however, is not for the support of judicial decisions, the usual conception of its use by those who favor international police, but is limited to bringing a recalcitrant signatory state before the court or the council of conciliation, as the case may be, for investigation of its grievance, with a view to inducing a rational settlement, instead of allowing resort to war.

International Peace Conferences.—The war has prevented conferences from being held by several international organizations which are accustomed to having yearly meetings. However, the Lake Mohonk Conference on International Arbitration was held as usual. The Conference recommended that Congress should extend the jurisdiction of the courts of the United States as to criminal prosecutions for the violation of the treaty rights of aliens. An International Peace Congress, which also served as the fifth American Peace Congress, was held in Berkeley and San Francisco, Oct. 10-13. Premier Okuma of Japan wrote a letter to the Congress on the wrongfulness of the feeling of racial superiority and the folly of armed peace. The convention asked the United States Congress to adopt an immigration policy based on the just and equitable treatment of all classes and to make provision for the protection of all aliens by the United States Government. While the convention deemed disarmament impracticable, it opposed the widespread demand "for costly preparation against hypothetical dangers." It objected to the militarization of America and declared against the establishment of military training in the public schools as inconsistent with American ideals and tending in the direction of conscription. It endorsed with amendments the platform of the League to Enforce Peace and favored a league of the Americas to preserve peace between North and South America.

A World Court Congress called by John Hays Hammond and others was held in Cleveland in May, where it met with a large response from business men. Under the direct auspices of the Panama-Pacific International Exposition a Conference of Women Workers to Promote Permanent Peace was organized at San Francisco and presided over by Mrs. May Wright Sewall, who was sent to inform President Wilson of the earnest desire of the women of the United States to bring about peace in Europe. The Clark University Conferences were resumed Dec. 16-18, the general subject of the papers being, "The Problems and Lessons of the War." The American School Peace League, which held its annual meeting at the time of

the convention of the National Education Association, and whose secretary, Mrs. Fannie Fern Andrews, has endeavored, through publications and state branch organizations, to promote a larger conception of citizenship, recognized the service in the cause of peace of President Wilson by presenting him with a gold medal. The American Peace Centenary Committee has been obliged to modify its programme owing to the war, but will carry it forward when the contest is over, probably in connection with the anniversary in 1917 of the signing of the Rush-Bagot agreement relating to the limitation of armaments on the Great Lakes.

Preparedness and Pacificism.—To encourage national preparedness, which war conditions have made a coming issue, the National Security League was formed in 1915; to discourage the spirit of militarism, the American League to Limit Armaments has been organized; both societies have their headquarters in New York City and are establishing branches in various states of the Union. The press has announced the intention of Henry Ford of Detroit to devote to constructive peace and to resist militarism the sum of $10,000,000, but no definite plans as to the application of the money are authoritatively announced. Mr. Ford organized a party of American pacifists which sailed for Europe on Dec. 4 on the steamer *Oscar II* for the purpose of ending the war.

Woman's Peace Party.—The Woman's Peace Party, organized at Washington in December, 1914, with Jane Addams as president, Lucia Ames Mead, secretary, and Miss S. P. Breckinridge, treasurer, with its headquarters at Chicago and branches formed in 21 states of the Union, has adopted several of the distinctive features of the programme of the Union of Democratic Control, London, which has modified peace doctrine in the United States. The Woman's Peace Party emphatically favors woman suffrage as essential to peace. It sent nearly 40 delegates to an International Congress of Women, which met at The Hague in April to bring pressure to bear upon the European powers to stop the war. At the close of the Congress, its initiator, Aletta Jacobs (Holland), and its presiding officer, Jane Addams (United States), together with Emily G. Balch (United States), Chrystal MacMillan (Great Britain), and Rosika Schwimmer (Austria-Hungary), visited European capitals to confer about peace with officers of state. This delegation was unofficially encouraged to secure neutral mediation which the warring powers confessedly could not seek themselves without being put to disadvantage. It reported to President Wilson and embodied its results in a manifesto. An outgrowth of the congress at The Hague is the Woman's International Committee for Permanent Peace, with national divisions.

Proposed Conference of Neutral Nations.—The International Peace Congress at Berkeley and San Francisco passed resolutions directing its president, Dr. David Starr Jordan, to go to Washington to urge President Wilson, whose general policy it approved, to call a congress of neutral nations to form a permanent body to bring about peace. The idea of a congress of neutrals, led by the United States, ready in continuous session to offer mediation to the belligerent nations, was urged in resolutions passed in concerted meetings held in various parts of the country on Nov. 8 at the instance of the Emergency Peace Federation, Chicago, with a view to inducing positive action by President Wilson. It has been understood, however, that President Wilson will repeat his offer of mediation made at the beginning of the war whenever the belligerents will avail themselves of his friendly services.

The Carnegie Endowment.—The war has materially lessened the activities which the Division of Intercourse and Education of the Carnegie Endowment for International Peace (Dr. Nicholas Murray Butler, director) had planned for Europe before the war began, and the work of the international bureau at Berne has, to a large degree, been suspended, its subventions for the time being having been discontinued. But the division has published trustworthy statements relating to the causes and effects of the war as well as sets of

official documents issued by the belligerents, which it has distributed through the American Association for International Conciliation; secured the publication of interviews with prominent men on questions relating to the war and future peace; sent out lecturers to reach audiences drawn from educational and commercial bodies; formed international polity clubs in the colleges; and greatly developed the work of the Pan-American Division of the American Association for International Conciliation.

The Division of Economics and History (John Bates Clark, director) has reduced the number of studies for publication which it had in hand. Since it was impossible to carry on work in Europe, investigations are being initiated in the Americas to promote the common interests of North and South America.

In the Division of International Law (Dr. James Brown Scott, director), the war caused a postponement of important plans, one of which was the institution of the Academy of International Law at The Hague, but, meantime, the American Institute of International Law is taking shape, with the prospect of having affiliated branches in all the countries of Latin-America. Publications are steadily going forward. In response to popular demand for information, this division has compiled from official sources facts relating to the status of The Hague conventions, together with their texts in pamphlet form, and has distributed them widely. Valuable service has been rendered through the compilation of a mass of expert information for the Neutrality Board of which Dr. Scott is chairman.

Other Peace Agencies.—The Church Peace Union founded by Andrew Carnegie (Dr. Frederick Lynch, secretary), has been active through various agencies, among them being the Federal Council of the Churches of Christ in America. The Federal Council has commissions on peace and arbitration, relations with Japan, and Christian education, the work of the latter having been the preparation of peace lessons for Sunday schools. The American branch of the World Alliance of the Churches for the Promotion of International Friendship has increased interest in peace among the American churches by means of conventions held under the leadership of a travelling Church Peace Squadron. While the war has been raging in Europe, committees of church members have been formed in the different belligerent as well as neutral countries for peace work in common when the war is over as contemplated by the Constance Congress.

After nearly a quarter of a century of devoted service, Dr. Benjamin F. Trueblood has resigned as the active secretary and become honorary secretary of the American Peace Society. Arthur D. Call, the executive director, has been chosen secretary. Prof. George W. Kirchwey has been elected president in place of Theodore E. Burton, resigned. Dr. John Mez has been added to the office staff in place of Fred B. Foulk, who has been appointed secretary of the federation of the International Polity Clubs. Under the auspices of the World Peace Foundation, a summer conference of these clubs was held at Ithaca at which lectures were given by Norman Angell, George W. Nasmyth and others. The Foundation has reprinted official documents concerning neutral and belligerent rights, together with other literature for the benefit of teachers, publicists and men of affairs.

Arbitration.—There have been no cases before the Permanent Court of Arbitration at The Hague, but an agreement for procedure by a Hague tribunal has been made between the United States and Germany for the settlement of disputed questions of treaty interpretation arising out of the destruction on the high seas of the American neutral schooner *William P. Frye* by the German cruiser *Prinz Eitel Friedrich* (see I, *American History*). No awards were rendered by the American-British Claims Commission at Washington. Several treaties for the advancement of peace on the Bryan plan for international commissions of inquiry have been ratified and proclaimed during the year with Latin-American countries, Italy, China and Russia. The agreement for arbitration between the United States and the Netherlands has been extended for five years.

IV. FOREIGN AFFAIRS

LATIN AMERICA

ROSCOE R. HILL

General Survey of Conditions.—The progress of Latin America during 1915 continued to be affected by the European War. The most significant facts of this progress were the improvement in the economic situation and the strengthening of the bonds of Pan-Americanism.

Commerce, which was brought nearly to a standstill in 1914, began to assume more normal proportions. The increased demand for raw products, especially foodstuffs, and the uniformly good grain crops augmented the exports and produced money which was in turn expended for manufactured imports. The great expansion of the trade between Latin America and the United States was the most notable feature of the year's commercial development. The imports of the United States from Latin America during the first eight months of 1915 amounted to $439,434,344 as compared with $345,741,867 for the same months of 1914, and the exports totaled $194,595,085 as compared with $159,789,619. Greater facilities for financing trade afforded by the establishment of dollar exchange, energetic efforts on the part of American manufacturers to study the Latin-American market and expand their trade, the reciprocal necessities of the two regions and the growing solidarity of Pan-American interests, were the factors which produced this expansion.

All the Latin-American republics experienced financial difficulties. In each country the problem of the budget was serious and in most instances a deficit had to be faced. The prohibition by England and France of further foreign investment and the difficulty of borrowing elsewhere, although some small loans were floated in the United States, produced in Latin America a scarcity of ready money. This had the effect of either delaying or stopping altogether the work on public improvements, railways and other enterprises. To remedy these conditions taxes and duties were increased, salaries and other expenses were reduced, and in some cases, especially in Argentina, Brazil and Peru, issues of paper money were made. Some of the moratoria established in 1914 were extended through a part or all of the year. In general the republics met their foreign obligations. The state of the foreign debt of Haiti, however, was one of the principal causes of the disturbed conditions there.

The inter-Latin-American relations, on the whole, were amicable. The most significant event in these relations was the visit of Lauro Müller, the Brazilian Minister of Foreign Affairs, to Uruguay, Argentina and Chile. This resulted in the negotiation of an arbitration treaty between the A. B. C. powers, the object of which was to better the political understanding of those countries.

The development of Pan-Americanism was best observed in those occurrences in the United States connected with Latin America. These events served to indicate the opportunities and responsibilities of the United States with respect to the Latin-American republics and to disclose the desire of these countries to get into closer commercial, financial, political and intellectual relations with the United States. This increase of the Pan-American fraternal spirit was evidenced in many ways. The Pan-American Financial Conference, held at Washington in May and attended by delegates from all the

Latin-American countries, except Haiti and Mexico, made a study of the financial and commercial conditions of the American states. A better mutual understanding of the economic situation of the countries represented, the revelation of the immense possibilities of inter-American finance and trade, and the creation of an International High Commission to consider uniformity of laws relating to trade, were the results of this conference.

In a political way the joint action of the United States, the A. B. C. powers, Bolivia, Uruguay and Guatemala with respect to Mexico and the recognition of Carranza demonstrated further the community of interests of the Pan-American nations. The work of the Pan-American Union, in studying the problems relating to Pan-Americanism, served to strengthen further the political relations. President Wilson, in his message to Congress (Dec. 7), reaffirmed the principles of the Monroe Doctrine and of non-intervention, and added that there now exists "a full and honorable association as of partners between ourselves and our neighbors [the Latin Americans] in the interest of all America, North and South." (See also III, *International Relations.*)

The increasing attention in the United States to the study of subjects dealing with Latin America indicated the development of the intellectual and cultural relations. The best example of this was the work of the Carnegie Endowment for International Peace in offering, through the summer schools of 39 universities, 17 colleges and 11 normal schools of the United States, many courses on the geography, political and social development, economic status, history and international problems of Latin America. These courses were in addition to those offered by educational institutions themselves, either in their regular or summer sessions. The representation of 18 Latin-American states at the Panama-Pacific Exposition, the meeting of the Pan-American Medical Congress at San Francisco in June, and the meetings of the Pan-American Scientific Congress, the International Congress of Americanists, and the Conference on Latin-American Studies, at Washington in December, were other evidences of the continued progress of Pan-Americanism.

The relations of the United States with Haiti and Mexico were strained during the year, but in both cases they had entered into a new phase before the close of 1915. The change was accomplished in Haiti by the establishment of American control over the finances and in Mexico by the recognition of Carranza. (See III, *International Relations.*)

In general the internal political situation of the various republics was peaceful. Mexico and Haiti, however, continued in revolutionary anarchy throughout most of the year. Very slight disturbances also occurred in Paraguay, the Dominican Republic, Ecuador and Guatemala. In several of the countries presidential elections took place in a most orderly manner. There was much valuable legislation in all the republics, dealing especially with economic, social and educational problems.

The following are the more important books dealing with Latin America published in English during the year:

ADAMS, A. A.—*The Plateau Peoples of South America.* (New York, Dutton.)
AROSEMENA, J. A., ed.—*Panama in 1915.* (Panama City.)
AUGHINBAUGH, W. E.—*Selling Latin America.* (Boston, Small, Maynard.)
BABSON, R. W.—*Future of South America.* (Boston, Little, Brown.)
BARRANCO, M.—*Mexico and Its Educational Problems.* (New York, Teachers College.)
BARRETT, J.—*Pan America and Pan Americanism.* (New York, Harpers.)
BOWMAN, I.—*South America: Geography Reader.* (Chicago, Rand-McNally.)
BUTLER, S. A.—*Historic Churches in Mexico.* (New York, Abingdon Press.)
CHANDLER, C. L.—*Inter-American Acquaintances.* (Sewanee, Tenn.)
FORNARO, C. DE—*Carranza and Mexico.* (New York, Kennerley.)
HAMMERTON, J. A.—*The Real Argentine.* (New York, Dodd, Mead.)
HART, A. B.—*The Monroe Doctrine and Its Interpretation.* (Boston, Little, Brown.)
HIRST, W. A.—*A Guide to South America.* (New York, Macmillan.)
HUTCHINSON, L.—*The Panama Canal and International Trade Competition.* (New York, Macmillan.)
JONES, J. B., ed.—*The Blue Book of Guatemala, 1915.* (New Orleans.)
MACCORKLE, W. A.—*The Monroe Doctrine in Its Relation to the Republic of Haiti.* (New York, Neale.)

MARTINEZ, A. B.—*Baedeker of the Argentine Republic.* (New York, Appletons.)
MARTINEZ, A. B., and LEWANDOWSKI, M. —*Argentine in the Twentieth Century.* (New York, Scribners.)
MILLS, G. J.—*Argentina.* (New York, Appletons.)
——. *Chile.* (New York, Appletons.)
PECK, W. E.—*Export Opportunities in South and Central America.* (New York, Association Press.)
SPENCE, L.—*Myths of Mexico and Peru.* (New York, Stokes.)
ROSS, E. A.—*South of Panama.* (New York, Century.)

Argentina.—Victorino de la Plaza, who was completing the unexpired term of the late Roque Saenz Peña, occupied the presidential chair during the year. The next election occurs in 1916, and an active campaign was begun in the summer. President Plaza, however, refrained from taking any part in the political agitation.

The recovery from the crisis of 1913-14 continued and business conditions took on a much healthier tone. One effect of the European War was the development of industries, especially the manufacture of military cloth and saddlery, for which large orders were placed by several of the European countries. Despite the severe floods early in the year in the Rio Negro and Colorado valleys, with the resultant loss of life and damage to crops, Argentina had excellent harvests of grain. The first six months of the year showed a large increase in the exports of wheat, corn and oats, over the corresponding months of the preceding year. High freights were a hindrance to the commercial revival, yet a large amount of money was received from exports and served to relieve the critical financial situation. Further financial aid was secured by a loan of $15,000,000 made through the National City Bank of New York, in January, and one of $50,000,000 placed in England and the United States, in May. Also, an issue of 60,000,000 pesos paper of treasury notes at 6 per cent. was made to pay salaries, which were in arrears.

The extra session of Congress experienced much difficulty in adjusting the budget for 1915. The receipts were estimated at 322,481,614 pesos paper and the expenses at 322,301,308. In order to maintain the budget at these amounts, the executive was empowered to reduce salaries 10 per cent., levy an export duty on cereals, and increase the excise on wines, liquors, beer and tobacco.

The Supreme Court handed down an important decision regarding the exemptions from taxation enjoyed by railways under the Mitre law. By this decision such public services as paving, lighting and sanitation were held not to be included in the fixed tax payable under the law, but the assessments were to be paid by the railways, just as by other property owners. Notable progress was made in social betterment. The government backed a programme for the improvement of living conditions of working people, which included the construction by a New York firm of 10,000 homes to be sold on easy instalments. During the year, an industrial school for girls and women was opened in Buenos Aires.

Bolivia.—President Ismael Montes continued his vigorous administration during 1915. The greater freedom allowed to the press brought forth, however, no little criticism of his regime. Although the presidential election does not take place until 1917, the question of a successor to Montes was the leading political problem of the year. In April Juan Maria Zalles, Secretary of Fomento, and Dr. Juan Saracho, Secretary of Foreign Affairs, resigned from the Cabinet in order to undertake the canvass for nomination by the Liberal party. The Republican Union waged an active campaign looking toward the election of a President opposed to the principles of Montes.

A decree issued Dec. 31, 1914, suspended martial law and granted a general amnesty. By various decrees the moratorium, established at the outbreak of the European War, was extended until the end of 1915. The long disputed and difficult question of the boundary between Bolivia and Paraguay was under discussion and a new treaty was signed, on July 19, which looked toward a final settlement (see also XXIII, *Exploration*). Work was continued on the La Quiaca-Tupiza railway, which is to connect Bolivia and Argentina, and new

railway projects were formed, although little actual progress was made on them owing to a lack of capital.

An Institute of Criminology was organized at La Paz, for the purpose of making a scientific study of the criminal and his surroundings and recommending the enactment of corrective laws. In order to provide a more adequate and better prepared supply of teachers, plans were formulated for the establishment of a normal school at Umala, for which the students were to be chosen by competitive examination and to be supported by the Government during their studies. The budget for 1915 estimated the receipts at 16,985,000 bolivianos and the expenditures at 21,453,938 bolivianos (boliviano = $0.389).

Brazil.—President Wenceslau Braz, who was elected in 1914 for a four-year term, efficiently carried on the administration, despite the difficult crisis through which the country passed. In his message to Congress in May, he recommended the amendment of the electoral law, the revision of the customs tariff, the acceptance of the remainder of the civil code, and the adoption of financial measures adequate to the needs of the country. In July, he pointed out the critical financial situation of the Government resulting from the excessive expenditures and urged economy and a reduction of the budget. He indicated also the need of protecting foreign capital and of developing commerce with the Mediterranean countries.

In February, a conspiracy against the governor of Rio de Janeiro, in which sailors from two battleships were involved, was discovered. A number of arrests were made and the movement was immediately suppressed. The revolt of the "Fanatics," which had continued for a number of months, in the States of Parana and Santa Catalina, was finally crushed by the government forces, in June.

The important legislation of the year included a law for the encouragement of Belgian settlers, a law providing for the registration of fine domestic animals, and measures providing for the protection of coffee and other national products. In the attempt to readjust the sadly tangled finances of the country, an issue of 20,000,000 milreis (about $5,000,000) of five per cent. bonds was authorized in May and an issue of 30,000 contos paper ($191,000,000) to pay treasury debts was provided for in August. The budget for 1915 was estimated at an amount equal to $133,478,293.

In international relations the most significant event was the visit of Lauro Müller, Secretary of Foreign Affairs, to Argentina and Chile. The result of this visit was the A. B. C. treaty, which was ratified by Brazil in November (see III, *International Relations*). More effective measures were provided for the enforcement of neutrality, after attempts at its violation by belligerent vessels.

Chile.—President Ramón Barros Luco, whose term expired in 1915, found it necessary to reorganize his Cabinet with Pedro N. Montenegro, Secretary of Interior, at its head. The chief interest in politics centered in the election for deputies, one-third of the senators and presidential electors. The campaign was hotly waged and led to political rioting at Valparaiso, Iquique and Soto, and the assassination of Guillermo Eyzaguirre, a deputy, by his political enemies on the island of Chiloe. The canvass resulted in a victory of the coalition of the Liberal Democrats, Conservatives and Nationalists over that of the Radicals, Liberals and Democrats. Juan Luis Sanfuentes, the successful Presidential candidate, represented the Liberal Democrat (Balmacedist) group, which was forced out of power 24 years ago. President Sanfuentes assumed office on Dec. 23.

The economic crisis continued through the year. This was largely due to the bad situation in the nitrate industry. Many plants were closed because of lack of shipping facilities and in addition there was a decided drop in the price of this commodity. A law was passed delaying the enforcement of the new conversion law, until Jan. 1, 1917, and a new tax law was enacted for the purpose of increasing the receipts of the Government. Other methods for se-

curing more funds were economies in administration and the sale of battleships which were under construction in England. The moratorium on bills of exchange was continued until Sept. 1. Despite the reductions in salaries, the estimated budget of expenditures for 1916 was 341,768,491 pesos paper (peso paper = $0.20).

The destruction of the German cruiser *Dresden* by the British fleet in the territorial waters of Juan Fernandez Islands bade fair to lead to international difficulties. Chile protested to Great Britain and received an apology, stating that the *Dresden* had not accepted internment and that it was destroyed to protect shipping. This apology was accepted by Chile. Germany sent an energetic protest to Chile, denying the allegations of the British note and demanding satisfaction. This protest was returned by Chile.

Colombia.—The administration was in charge of President José Vicente Concha, who was elected in 1914 for four years. In September, because of a lack of confidence in the Government, President Concha effected a partial reorganization of his Cabinet, giving it more liberal tendencies. The work of Congress comprised the discussion of various constitutional reforms, including the election of Senators by departments instead of by population and the change from annual to biennial sessions of Congress. Other problems considered were the monetary system, organization of finances, penal reform and railway extension. The assassination of Gen. Uribe Uribe and other political leaders in similar and mysterious circumstances was considered to have some connection with politics, although no very satisfactory explanation was given of the deeds.

The beginning of the year found the country in a critical financial situation. In accordance with the new law to relieve this condition, President Concha doubled the stamp duties, decreed the coinage of 2,000,000 pesos silver, reduced salaries five per cent., and established an export tax on gold and woods. A new excise was laid on cigarettes, alcohol and foreign liquors. That these measures did not entirely solve the problem is shown by the fact that the proposed budget for 1915-16 estimated the receipts at 11,900,000 pesos gold and the expenditures at 16,389,487 pesos gold.

A notable step in educational matters was made by the establishment of the National Institute of Agriculture, which was placed in charge of Belgian and American professors. In the interest of preparedness the obligatory military service was increased from one year to 18 months.

Costa Rica.—The chief executive was Alfredo González Flores, who was chosen by Congress in 1914 for a four-year term. Congress assembled in extra session on March 9 to determine the legality and constitutionality of the laws issued by the president under the legislative decree of Aug. 8, 1914. The important legislation of the year included a law requiring fire-insurance companies to keep specified sums on deposit in Costa Rica in order to pay promptly all losses, a law establishing a special fund for loans to agriculturalists, a law relating to injuries sustained by workingmen while in the employ of other persons, and a Sunday-closing law. One of the first results of the Pan-American Financial Conference was achieved by Costa Rica, which arranged with New York bankers for a credit of $500,000, making New York exchange available in Costa Rica. Another measure to relieve the financial stress was the floating of a six-year six per cent. internal loan, guaranteed by an export duty on bananas. The budget for 1915-16 estimated the revenues at 7,563,000 colones and the expenditures at 8,064,124 colones (colon = $0.465).

Educational matters received much attention. By an executive decree of Jan. 14, rules and regulations were promulgated for the Normal School at Heredia, a college of dental surgery was opened at San José on July 5, and the department of agriculture arranged for 50 agricultural schools in connection with the public schools.

Cuba.—President Mario Menocal continued his efficient administration through the year. Although the next Presidential election does not occur until the close of 1916, there was considerable political activity during

1915. It was claimed that the Conservatives under Menocal were preparing to establish themselves firmly in power, while the Liberals were taking active measures to secure control of the administration of the country. Among the legislative acts were an amnesty bill freeing Ernesto Asbert, former governor of Habana, who was convicted of the murder of Chief of Police Riva of Habana (Feb. 1), a law governing the entry of Chinese into the country (March 1), a law providing for the establishment of maternity hospitals in each of the six provinces, and the granting of a subsidy of $6,000 per kilometre to the Cuban Railways Co. for the construction of new lines. The problem of illiteracy and the disposition of ecclesiastical property were discussed.

In financial matters the chief interest centered in the putting into operation of the law providing for a national currency and the retirement from circulation of all foreign coins except those of the United States. Although this unification of the circulating medium was an advantage to the country, it met with a vigorous opposition from the money changers who were making a large profit under the old regime. By an executive decree the budget of 1914-15 was continued in force for 1915-16.

Educational affairs were given much consideration. Laws were passed authorizing the establishment of normal schools in the several provinces and providing for the introduction of the Montessori system into the country. Three agricultural experiment schools and normal schools for men and women in Habana were opened. The suppression of the teaching of English in the primary schools, by a decree of the Secretary of Public Instruction, provoked a lively discussion as to the merits of the step.

Dominican Republic.—Juan Isidro Jimenes, who assumed the presidency in December, 1914, continued in office during 1915, but not without considerable opposition. In April there was a revolutionary outbreak, which was put down without much difficulty. It was serious enough, however, to occasion the presence of United States warships. The American control of the customs, which has been of decided benefit to the country, continued to meet with some opposition. In May, the Dominican Government sent a commission to Washington to discuss the financial situation with Secretary Bryan. This commission entered a vigorous protest against a number of acts and policies of the American officials in charge of the customs receivership. The revelations of the Sullivan scandal (see I, *American History*), which attracted much attention, in both the Dominican Republic and the United States, served to justify in a measure the complaints of the Dominicans. A new educational code was put in force early in the year.

Ecuador.—The process of rehabilitating the country, after the revolutions of the past few years, was carried on energetically under President Plaza. The capture of the rebel leader, Gen. Carlos Concha, at Esmeraldas in February, put an end to the armed opposition to the Government. President Plaza, in his annual message, vigorously attacked the existing political system, which emphasized personalities and forced the President to become dictatorial. He urged the adoption of the parliamentary system of government as a remedy for this situation. The campaign for the Presidential election, which occurs in January, 1916, was bitterly waged during the latter part of 1915.

The economic crisis, brought on by the revolt of General Concha, the outbreak of the European War and the usury practiced by the Bank of Ecuador, continued through the year. To relieve the financial situation an issue of 300,000 sucres (sucre= $0.487) of nine per cent. treasury bonds, guaranteed by an export tax on cacao, was made in July. The budget of 1914 was continued in force for 1915.

Guatemala.—President Manuel Estrada Cabrera continued to dominate the affairs of the country. An incipient revolt under General Vazquez, which occurred in October, was speedily ended when the leader was wounded and captured. The extent of Cabrera's control was shown by the fact that Congress, before its adjournment on April 30, empowered

him to issue, during the recess, such laws and legislative decrees in the different branches of the administration as he might deem proper for the good of the service. In May, a law was passed providing for the Presidential election in January, 1916. Cabrera at once became a candidate to succeed himself for a fifth term. An important executive decree was issued in August which ordered the local officials to accord better treatment to the Indians, relieving them of a part of their taxes and of the extra work demanded of them outside of the regular hours of labor. On Sept. 7 there occurred a severe earthquake which destroyed the town of Jutiapa. The budget for 1915-16, was estimated at 60,082,640 pesos paper (peso paper = $0.06).

The chief feature of the international relations was the signing of a boundary treaty with Honduras. This provided for a mixed commission to study the question and decide upon a line which should be adopted. The President of the United States was chosen arbiter of any differences which might arise.

Haiti.—On Jan. 7, a revolution against the government of President Davilmar Theodore broke out and Cap Haitien was attacked. American marines from the gunboat *Wheeling* occupied Plaines, Trou Ounamenthes, Fort Liberte and Limonade in order to protect American interests. Gen. Vilbrun Guillaume went over to the rebels and captured Cap Haitien (Jan. 16), but surrendered it again two days later. Disorders continued and, on Feb. 23, President Theodore abdicated and took refuge on a Dutch steamer. Guillaume then entered Port-au-Prince and was proclaimed Provisional President by the National Assembly (March 5).

In April, General Rosalvo Bobo started a revolt against the Government, claiming that Guillaume was planning to turn the finances of the country over to the United States. Cap Haitien was captured on April 25 and the surrounding region fell into the hands of the rebels. Numerous engagements took place, which resulted in the final defeat of the rebels and the recapture of Cap Haitien by the government forces (June 19). After this event French marines were landed to restore order in Cap Haitien. These were replaced a few days later by American marines from the armored cruiser *Washington* under the command of Rear-Admiral W. B. Caperton.

On July 17, President Guillaume, who realized that his fall was a question of only a short time, began a series of political arrests and created a ten-days' reign of terror which ended in a new revolutionary outbreak. General Oscar, governor of Port-au-Prince and a supporter of Guillaume, thereupon ordered the execution of about 160 political prisoners, including ex-President Orestes Zamor. This massacre aroused intense indignation and a mob immediately invaded the Dominican Legation where Oscar had taken refuge, dragged him out and shot him to death. The following day (July 28), President Guillaume was taken forcibly from the French Legation and shot. The American marines who landed to restore order, were attacked. As efforts to secure the disbanding of rebel forces failed and disturbances continued, the Americans occupied a considerable number of places in the Republic during August and September. On Aug. 12, the National Assembly elected for President Gen. Sudre Dartiguenave, who was favorable to the policy of American control of finances. The election was followed by new uprisings and a number of skirmishes between the United States forces and the rebels took place. Finally on Sept. 29 and Oct. 1, Generals Petion and Morency, leaders of the rebels, agreed to lay down their arms and desist from further opposition to the United States and Haitian authorities. By the end of October, the country was tranquil.

Financial bankruptcy of the Government and the efforts of the United States to remedy it were the principal causes of the revolutionary disturbances recounted above. The United States stood ready to take charge of the financial situation, but there was much opposition to this plan. Paul Fuller, who was dispatched as President Wilson's representative in April, failed to secure any agreement regarding the matter.

The continued revolution forced the United States to intervene actively and take possession of the custom houses in August and September. Greater pressure was then brought to bear upon the Government of President Dartiguenave to secure a convention, which would put an end to the conditions of anarchy. The treaty, which was signed on Sept. 16, provided for the establishment of a receivership of customs and supervision of the finances under American control, and the formation of a native constabulary under command of American officers. The treaty, which was for ten years, was ratified by the Haitian Congress in November. Pending the ratification by the United States Senate, a *modus vivendi* was entered into providing for temporary control by the United States. (See also III, *International Relations.*)

Honduras.—The constitution of Honduras provides that no one shall assume the Presidency who has held that office during the six months preceding the inauguration. To comply with this provision, President Francisco Bertrand, who was filling the unexpired term of the late Manuel Bonilla, retired from office on July 28, in order to become candidate for the office. Alberto Membreño, who was chosen first Vice-President in January, became acting President for the remainder of the term. In the Presidential elections held in November, Bertrand was chosen President and Membreño, Vice-President, for the ensuing term of four years. Two important treaties were ratified during the year, one a boundary treaty with Guatemala (*q. v., supra*) and the other a reciprocity treaty with Salvador. The latter removed most of the duties on goods passing from one country to the other, provided for better highways along the frontiers and arranged an equalization of import duties. The budget for 1915-16 estimated the receipts at 5,929,420 pesos (peso = $0.365). The country suffered from a severe plague of locusts in June.

Mexico.—Internal anarchy continued throughout the year in Mexico. At the opening of 1915, Gen. Venustiano Carranza, First Chief of the Constitutionalists, controlled Vera Cruz and the southern portions of the country, and the Conventionalists, under Gen. Francisco Villa and Provisional President Eulalio Gutierrez, held Mexico City and the North. Gen. Emilio Zapata nominally supported the Conventionalists. During the year Mexico City changed hands many times, being held alternately by Obregon, Carranza's general, Zapata and Villa. These changes completely disorganized business and produced great suffering and want. Prices were abnormally high, the citizens and business men were subjected to repeated levies of taxation by the various factions, food crises occurred several times, and many people died from starvation. Upon the occupation of the capital by Zapata on March 10, John B. McManus, an American citizen, was killed. This brought forth a protest from the United States, which was answered by the payment of an indemnity by Zapata, the first received for any outrage committed during the revolutions of the last few years. In other parts of Mexico the struggle resulted in such devastation that the Red Cross took measures to relieve the distress.

In January, President Gutierrez was repudiated by the Convention, which declared itself supreme and chose Roque Gonzales Garza as Provisional President (Jan. 17). Upon the approach of General Obregon, the Conventionalist forces evacuated Mexico City and Garza resigned (Jan. 29). On Feb. 3, Villa assumed control of the executive power, with headquarters at Aguascalientes. He renounced his claim on March 24 and Garza was again recognized. Villa was now made Chief of Operations and virtually controlled the Convention government. On June 9, however, Gonzales Garza was deposed and Francisco Lagos Chazaro was elected in his place.

Carranza maintained his seat of government at Vera Cruz, although his forces occupied the capital at various times. His arbitrary conduct caused much adverse criticism, especially by foreigners. On Jan. 7, he annulled all land concessions made since 1876 and prohibited the further

development of mineral lands. He also closed two oil companies and placed an embargo on their products. These measures brought forth vigorous protests from the United States and Great Britain. In February, the Spanish minister refused to deliver up a refugee in his legation. This angered Carranza and he expelled the minister. Spain protested, but accepted the explanation of Carranza. Carranza also endeavored to force the diplomats to remove from Mexico City to Vera Cruz but failed. In March he closed the port of Progreso and prohibited the export of sisal hemp. The United States sent a note of protest and stated that the closure would not be tolerated as it interfered with American industry.

The military campaigns between the two leading factions were carried on in central and northern Mexico. Puebla was taken by the Carranzistas (Jan. 5), but was recaptured by Zapata on Jan. 22. Villa captured Saltillo, after a three days' battle, on Jan. 10 and Monterey two days later. Villa forces won an important five-day battle near Monterey (Feb. 8), and the Villista General Medina drove Gen. Miguel Dieguez from Guadalajara on Feb. 13. During April, a contest for the control of central Mexico, in which nearly 100,000 men were engaged, took place at Celaya between Generals Obregon and Villa. In this struggle Villa was defeated and retired northward. Both sides gained victories in May. From June to September, Villa gradually moved northward, with Obregon in pursuit, but no important engagements were fought. During May and June the Yaqui Indians caused serious disturbances. Border difficulties with the United States occurred repeatedly, cost a number of American lives and caused much concern to the American Government.

During the year the United States sent many protests to the various leaders in Mexico. On June 2, President Wilson ended his period of watchful waiting and sent warning to all factions that they adjust their differences and "act promptly for the relief and redemption of their prostrate country" or the United States would be constrained "to decide what means should be employed to help Mexico save herself." As this step secured no results, a conference between the Secretary of State and the Ambassadors and Ministers of Argentina, Brazil, Chile, Bolivia, Uruguay and Guatemala, was held on Aug. 5th and a joint appeal was made to the Mexican leaders (Aug. 11). Further conferences were held but no action was secured upon the suggestions made. Finally on Oct. 9 the Pan-American Conference decided to recognize Carranza and the formal act took place on Oct. 19. Carranza then proceeded with the work of restoring order and crushing out the resistance of Villa. (See also III, *International Relations.*)

At this time Villa held little more than the states of Sonora, Chihuahua and Sinaloa, and Carranza forces were campaigning there. Villa failed in his attack on Agua Prieta (Nov. 3) and retired southward. Desultory fighting continued during November and December. On Dec. 18, upon the advice of a council of war held at Chihuahua, Villa announced that he would cease his opposition to Carranza and would retire to the United States. Two days later, an agreement was signed in El Paso, Texas, between representatives of the two factions. As this peace plan excluded Villa, he withdrew from Chihuahua to the mountains to continue the revolt. Juarez, the last Villista stronghold, was occupied by General Obregon on December 23.

Nicaragua.—Adolfo Diaz, who was elected in 1912, occupied the Presidency during 1915. In April, two minor revolutionary movements took place, but were speedily put down by the government forces. The extra session of Congress, called to consider these disturbances, passed a resolution denouncing the efforts to disturb order and affirming that it was ready to "coöperate with the executive power to maintain the institutions and preserve peace and tranquillity." In August a decree was issued granting complete and unconditional amnesty to all political offenders. The legislative enactments included a law regulating the practice of medicine, a law providing for return of duties on reëxported recep-

tacles and for free exportation of sugar from the Atlantic coast, and a law suspending the government monopoly of the sale of percussion caps and cartridges. In an effort to improve the financial condition of the government a direct tax of five cordobas per 1,000 was assessed on all kinds of property and business belonging to natives and foreigners (Jan. 1). The moratorium, which was declared upon the outbreak of the European War, was extended to Dec. 31.

Panama.—President Belisario Porras was in charge of the administration throughout the year. The work of Congress, which adjourned on Feb. 24, was extensive. The biennial budget was passed, public improvements were sanctioned, stamp taxes were provided for, import duties were increased from 15 to 20 per cent., and an eight-hour law was enacted. The United States refused to allow the increase in the import duties. To consider further the pressing financial problems, Congress was convoked in special session on Oct. 26. In February, a contract was entered into by the Government with New York financiers providing for the establishment of the Bank of Panama, of which the Government of Panama was to name one-fourth of the directors. The new bank acts as the fiscal agent and depository of the Government, includes a mortgage department, and has power to issue legal tender notes up to the value of its capital ($1,000,000). The budget for 1915-16 was planned to balance at 10,622,000 balboas (balboa = $0.50). A boundary treaty was entered into with the United States. In a disastrous fire which swept over half the city of Colon on April 30, eleven persons were killed, 7,000 were rendered homeless, and property amounting to more than $2,000,000 was destroyed. Preparations for the National Exposition of Panama, which is to commemorate the discovery of the Pacific by Balboa, were continued during the year, but on account of unexpected delays the opening was postponed until 1916.

Paraguay.—The energetic administration of President Eduardo Schaerer afforded a year of comparative peace to the country. In the first days of January, however, Colonel Escobar headed a revolt against the Government, on account of the economies practiced because of the financial crisis. The movement was put down at once, but martial law was maintained until fall. Efforts to secure the return of persons banished for political offenses failed. The chief problem of the country was the finances. The moratorium lasted most of the year and a new issue of legal tender bank notes, amounting to 35,000,000 pesos, was made. Money stringency caused a suspension of work on the new government hospitals and generally hampered the development of the country. A new treaty was negotiated with Bolivia (*q. v., supra*) respecting the boundary question. The opening of a new rural normal school (March 26) marked a forward step along educational lines.

Peru.—The programme of Provisional President Oscar Benavides included the provision for the economic difficulties, the enforcement of an honest budget and the passage of a new electoral law. The discussion of the budget led to a ministerial crisis in February. Benavides, as a reply to the charges that he desired to establish a dictatorship, issued a call for a Presidential election in May. He did not interfere in the elections and his favorite candidate was defeated. Dr. José Pardo, the candidate of a coalition of the Constitutional, Civil and Liberal parties, was elected President after a very orderly canvass. The great progress made during his previous administration, from 1904 to 1908, materially influenced the results of the election. Benavides resigned on Aug. 16 and Pardo was inaugurated two days later for a four-year term. After the retirement of Benavides, charges were presented to Congress, accusing him of abuse of power, the assassination of General Varela, treason, rebellion against the government of Billinghurst, securing loans without previous consent of Congress and amassing wealth while in office. An investigation of the charges was ordered by Congress.

To relieve the financial stress of the Government a small amount of money

was borrowed from Lima bankers, taxes on alcohol were increased, and the income tax was raised to six per cent. The budget for 1916 estimated the receipts at Lp 2,847,275 and the expenditures at Lp 2,973,471. A stamp tax and a 10 per cent. increase in duties on certain articles were proposed to cover the deficit. In October Congress finally approved the constitutional amendment guaranteeing religious liberty. President Pardo refused either to veto or sanction the measure. Upon the promulgation of the amendment by Congress, a clerical deputy started a riot and a demonstration by those opposed to the law took place in the streets of Lima immediately afterwards. A Farmer's Alliance was organized to interest the Government in passing laws favoring agriculture and to promote the creation of agricultural banks and the construction of better roads.

Salvador.—At the beginning of the year, acting President Alfonso Quiñonez Molina was in charge of the administration. After a very quiet campaign, Carlos Meléndez was reelected to the Presidency in January and assumed the office on March 1. During the year much attention was given to educational matters and to measures to stem the economic crisis due to the European War. Arrangements were made with European creditors which improved the credit of the country, and an income tax was laid to secure additional funds to meet the expenses caused by the abnormal conditions. The budget for 1915-16 estimated the revenues at 12,064,900 pesos and the expenditures at 12,373,502 pesos (peso = $0.365).

A treaty providing for freedom of trade between Salvador and Honduras was signed on July 27. A decree enforcing the law regulating sanitary conditions of tenement houses was published. The notable steps in education were the founding of a law college in the city of San Salvador, the opening of a normal institute for boys and the establishment of a graded system in the public schools throughout the republic. During September and October, there were numerous earthquake shocks, which damaged several towns and destroyed some lives.

Uruguay.—The administration of President José Batlle y Ordoñez, which terminated in March, was both criticized and praised. While he made wide use of the executive power, there were no political persecutions, freedom of the press was maintained, and numerous reforms in legislation were accomplished. At the election held by Congress on March 1, Feliciano Viera was chosen President for the ensuing four years. He was inaugurated two days later and announced that he would follow the general lines of President Batlle's policy. He proposed to secure constitutional reform, to maintain the freedom of elections, to develop greater friendship with other nations, to practice economy in government, to create new sources of revenue through moderate taxation, to foster education, stock-raising and agriculture, and to make provision for adequate labor legislation. The principal legislative enactments of the year were a law prolonging the inconvertibility of the notes of the Bank of the Republic for three months after the close of the war in Europe, a law for the promotion of agriculture and colonization, a law providing rules and regulations for the prevention of accidents to workingmen, and an eight-hour law. Financial difficulties pressed heavily upon the Government. A new issue of treasury notes was made and a loan of 6,000,000 pesos ($6,204,000), bearing eight per cent. interest, was placed at 95. The budget of 1915-16 estimated the receipts at $29,578,000 and the expenses at $29,477,311.

Venezuela.—Gen. V. Márquez Bustillos, who was chosen President for one year in 1914, controlled the administration during the first four months of 1915. On May 3, Gen. Juan Vicente Gómez was unanimously elected by Congress for the term from 1915 to 1922. Although accused by the *emigrés* of being dictatorial, Gómez continued the energetic policy begun in his previous administration (1910-14). During June and July, Congress carried out a very extensive legislative programme. The principal enactments were a law of

public credit, revenue laws affecting liquors and cigarettes, a law of public instruction, laws respecting primary, secondary, normal and higher education, including a provision for compulsory attendance in the elementary schools, an electoral law, a fundamental law for the Federal District, and a new tariff law. A code for the Federal Court of Cassation was also adopted. In January, a new decree regulating pearl fishing was published. It placed this industry in charge of an administrator from whom a license has to be secured by the payment of specified fees. The question of the French claims against Venezuela was finally adjusted by a protocol of Jan. 14. The budget for 1915-16 was estimated to balance at 39,594,500 bolivares (bolivar = $0.193).

CANADA

ERNEST H. GODFREY

Canada and the European War.—During the year 1915 the national energies of the Dominion of Canada have been mainly directed towards the successful prosecution of the European War. The raising and equipment of troops, the manufacture of munitions and other incidental activities have provided work for many who would otherwise have been out of employment. An extraordinarily abundant harvest, realizing good prices, is also a bright feature of the year's outlook. On the other hand, the heavy casualties suffered by the Canadian forces have brought sorrow and anxiety into thousands of Canadian homes. Numerous appeals for subscriptions to war funds, such as the Canadian Patriotic Fund, amounting (Dec. 21) to $6,367,553, Belgian, Serbian and prisoners-of-war relief funds, and those of the Canadian and British Red Cross Societies, have been generously responded to. In these directions, as well as in the sending of trained nurses to the front, the women of Canada have risen nobly to the height of a great occasion.

The first division of Canadian troops, consisting of over 33,000 officers and men, who landed in England on Oct. 16, 1914, received further training on Salisbury Plain during the fall and winter of 1914-15, under conditions which were particularly trying owing to excessively wet weather. At the end of February, 1915, the troops crossed to France and proceeded to Flanders, where they speedily proved themselves to be capable and efficient soldiers, whether as infantry in the trenches or as artillerymen serving excellent guns. During the spring and summer they were engaged in four principal fights, viz., Neuve Chapelle, Ypres, Festubert and Givenchy. In his despatches relating to the second battle of Ypres on April 22, when contrary to international conventions and the rules of civilized warfare, the Germans began the use of poisonous and asphyxiating gases, Sir John French wrote as follows: "The Canadians held their ground with a magnificent display of tenacity and courage. It is not too much to say that the bearing and conduct of these splendid troops averted a disaster which might have been attended with most serious consequences." Their total casualties up to June 30 were officially returned as 11,270, including 1,787 killed, 6,619 wounded and 1,842 missing, the remaining 1,022 being reported as prisoners, or otherwise incapacitated. Soon after the arrival of the first Canadian division in France the second division began to land in England, and in November a third division was offered to and accepted by the Imperial authorities. At the end of the year, the number of Canadian troops recruited for service overseas reached 212,690 out of an authorized total of 250,000. In a New Year's message to the Canadian people, issued on Dec. 31, 1915, the Prime Minister stated that from Jan. 1, 1916, the authorized forces of Canada would be increased to 500,000, this announcement being made "in token of Canada's unflinching resolve to crown the justice of our cause with victory and an abiding peace." On July 8 the Canadian Prime Minister (Sir Robert Borden) and a few days later the Minister of Militia and

Defence (Major-Gen. Sir Sam Hughes) arrived in England for conference with the British authorities; they also visited France and inspected the Canadian troops. On July 29 Sir Robert Borden received the freedom of the city of London, and on Aug. 24 General Hughes was knighted by the King. An event of Imperial significance was the presence of Sir Robert Borden at a meeting of the British Cabinet on July 14. While setting an important precedent, this event involved no violation of constitutional procedure, since the body known as the Cabinet is in theory a committee of the King's Privy Council, of which Sir Robert Borden is a member.

Finance of the War.—It was inevitable that the war, by which imports from hostile countries ceased, should occasion a serious loss of revenue from import duties. For the fiscal year ended March 31, 1915, the revenue totalled $133,073,482, including war-tax revenue amounting to $98,057, as compared with $163,174,394 in the previous year; so that the loss of revenue amounted to about $30,000,000. The Canadian Minister of Finance (Hon. W. T. White), in his budget speech of Feb. 11, stated that the Government policy had been, in the interest of employment, to maintain as far as possible the programme of public works under construction, but to restrict the undertaking of new works until the financial situation became clearer. He proposed that the full amount required for war expenditures should be borrowed, on the ground that these expenditures were being incurred for the purpose of preserving for future generations national and individual liberty and constitutional freedom. In August, 1914, a special war appropriation had been made of $50,000,000 for expenses to March 31, 1915, and on April 15, 1915, the War Appropriation Act, 1915, (Ch. 23) provided for a further sum of $100,000,000 to March 31, 1916. With a view to supplementing the revenues of the country, two acts were passed by the Dominion Parliament, viz., the Customs Tariff War Revenue Act, 1915 (Ch. 3), and the Special War Revenue Act, 1915 (Ch. 8). Both were assented to on April 8. The first amended the customs tariff of 1907 by imposing, subject to certain exemptions and conditions, additional duties of five per cent. on the British preferential tariff, and 7½ per cent. on the intermediate and general tariffs for all the imports of Schedule A, and also by imposing duties to these amounts upon imports in Schedule A hitherto admitted free. This Act was enforced as from Feb. 12. By the other Act special taxes were imposed upon the note circulation of banks, the income of trust and loan companies, the premiums of insurance companies (other than life, fraternal-benefit and marine), upon cable and telegraphic messages, and railway and steamboat tickets. A stamp tax of two cents was imposed upon all checks, receipts to banks by depositors, bills of exchange passing through banks, bills of lading and express and post-office money orders. A war stamp tax of one cent is also payable on postal notes and upon all letters and postcards, in addition to the ordinary rates of postage. Proprietary or patent medicines and wines sold in Canada are likewise subjected to special taxation. The full effect of these measures will not be apparent until the close of the fiscal year on March 31, 1916; but for the eight months ended Nov. 30, the total revenue was $104,756,305, as compared with $90,468,003 for the corresponding months of 1914, an increase of $14,288,302. For the same period the expenditure on Consolidated Fund Account was $65,345,503, as compared with $75,708,628 in 1914, in addition to capital expenditure of $91,475,889, including war expenditure, $66,514,955, as compared with $28,231,934, the capital expenditure for the same period in 1914. On Nov. 22, applications were invited for participation in a war loan consisting of the issue of bonds to the value of $50,000,000 maturing on Dec. 1, 1925, and bearing interest at five per cent., payable half yearly and exempt from taxes. The price of the issue was fixed at 97½ per cent. At the closing of the subscription lists on Nov. 30, it was announced that more than double the $50,000,000 asked for had been sub-

scribed, and the amount of the loan was increased to $100,000,000.

Agriculture.—The season of 1914, with its disastrous drought throughout the western provinces, was one of the worst on record, and the outlook for Canadian farmers would have been dismal had the low yields been combined with the low prices which prevailed before the outbreak of the war. This event sent prices up to unprecedented figures, which although not maintained at the high point first reached, were so remunerative that they more than compensated growers for the poor yield. The result was that the total estimated value of the field crops of Canada was $638,580,300, as compared with $552,771,500, the estimated value of the abundant harvest of 1913. For 1915 Canadian farmers were urged to sow larger areas to wheat, and the prospect of increased prices added the incentive of self-interest to that of patriotism. A fine fall, a mild winter and a good seed time were favorable to the efforts of the farmers, and the result was an increase in the area under wheat of nearly three million acres, as compared with the harvested area of the previous year. A wonderfully good growing season followed and resulted in a bumper harvest, exceeding, for the principal grain crops, all previous records, and, with better prices, bringing hopes of reviving prosperity to the western provinces.

The following table gives the areas and yields of the principal crops for the years 1914 and 1915, the yields for the latter year being provisional estimates, subject to revision:

Crop		Acreage			Production		
		1914 (000 omitted)	1915		1914 (000 omitted)	1915	
			Total (000 omitted)	Per Cent. of 1914		Total (000 omitted)	Per Cent. of 1914
Fall wheat	bus.	973	1,208	124	20,837	33,926	163
Spring wheat	"	9,321	11,778	126	140,443	302,332	215
All wheat	"	10,294	12,986	126	161,280	336,258	208
Oats	"	10,061	11,365	113	313,078	481,035	154
Barley	"	1,496	1,509	101	36,201	50,868	141
Rye	"	111	112	101	2,017	2,478	123
Peas	"	205	196	96	3,362	3,240	96
Beans	"	44	43	98	797	594	75
Buckwheat	"	354	344	97	8,626	8,101	94
Mixed grains	"	463	467	101	16,382	17,128	105
Flaxseed	"	1,084	806	74	7,175	10,095	141
Corn	"	256	253	99	13,924	14,594	105
Potatoes	"	476	479	101	85,672	62,604	73
Turnips, etc	"	175	173	99	69,003	64,281	93
Hay and clover	tons	7,997	7,875	98	10,259	10,953	107
Fodder corn	"	317	343	108	3,251	3,430	106
Alfalfa	"	90	93	103	218	262	120
Sugar beets	"	12	15	125	109	215	197
Tobacco	lb.	9.7	9	92	11,000	9,000	82

An official estimate places the exportable wheat surplus for the year at over 228 million bushels, a quantity more than required to supply the usual deficit of the Mother Country.

The following were the estimated numbers of live stock in Canada on June 30: horses, 2,996,099; milch cows, 2,666,846; other cattle, 2,399,155; sheep, 2,038,662; swine, 3,111,900. These are slight decreases as compared with 1914, except for horses and cattle other than milch cows, which show a small increase.

Commerce.—Eliminating coin and bullion, the value of the aggregate trade of Canada for the fiscal year ended March 31 was $958,894,411, as compared with $1,090,948,716 in 1913-14, a decrease of $132,054,305, or 12 per cent. Of the total value, exports amounted to $461,442,509, as compared with $455,437,224 in 1913-14, and imports to $497,451,902, as compared with $635,511,492, the increase in exports being $6,005,285, or 1.3 per cent., and the decrease in the imports being $138,059,590, or

21.7 per cent. In these comparisons it should be noted that the values are affected by variations in price due to the war, and especially in the case of exports to the rise in the prices of grain and flour. The total trade of the Dominion with the United Kingdom in 1914-15 was of the value of $301,962,209, and with the United States $495,014,031, the balance of $161,918,171 representing trade with countries other than these two. The total value of imports for home consumption in 1914-15, excluding coin and bullion, was $455,371,371, including $90,083,178 from the United Kingdom, $296,632,812 from the United States, and $68,655,381 from countries other than these; while the exports of Canadian produce were of the total value of $409,419,503, including $186,668,599 to the United Kingdom, $173,320,798 to the United States and $49,430,106 to other countries. These figures represent the immediate effect of eight months' war. While the value of the total trade shows diminution, the decrease in imports is much larger than in exports, and the result is the establishment of a practical equilibrium between the value of imports and exports. The percentage ratio of exports to imports reached its lowest point in 1912, when the value of the exports was little more than half that of the imports. For the last fiscal year, 1914-15, the ratio was raised to 92.7 per cent., and at the present time the balance of trade has become entirely in favor of Canada. The total trade of Canada for the six months ended Sept. 30, 1915, exclusive of coin and bullion, reached the value of $501,712,760, as compared with $497,697,573 for the corresponding six months of 1914. Imports during the period were $228,335,678 as against $280,860,222, and exports $273,377,082 as against $216,837,351.

Railway Construction.—According to the official railway statistics of the Department of Railways and Canals for the year ended June 30, 1915, the total railway mileage of the Dominion (not including 1,593 miles under construction) was 35,582, an increase of 4,788 miles over the preceding year. During the same year $66,990,127 was added to the capital liability of the railways, bringing the total up to $1,875,810,888, of which $1,024,085,983 was represented by stocks, and $851,724,905 by bonds. This does not include the liability attaching to mileage under construction.

Immigration.—The large annual immigration to Canada has been arrested, and for the fiscal year ended March 31, 1915, the total arrivals were only 144,789, as compared with 384,878 in 1914. Of the total in 1914-15, 43,276 came from the United Kingdom, 59,779 from the United States and 41,734 from other countries. For the first eight months of the current fiscal year (April to November), the total number of immigrant arrivals was 35,685, including 7,678 from the United Kingdom, 25,843 from the United States and 2,164 from other countries.

Legislation.—The fifth session of the twelfth Parliament of Canada was held at Ottawa from Feb. 4 to April 15, 1915, when 98 statutes were enacted, 24 of them being public general acts and the remaining 74 being local and private acts. The session was largely colored by the war, and certain measures relating to it have already been mentioned. Most of the remaining public acts are in amendment of existing statutes as follows: Canadian Patriotic Fund (Ch. 2); An Act respecting certain issues of Dominion notes (Ch. 4); An Act to authorize certain extensions of time to Insurance companies (Ch. 5); Judges (Ch. 6); Senate and House of Commons (Ch. 7); Adulteration, including prohibition of the manufacture and sale of adulterated maple sugar or syrup (Ch. 9): Canada Grain (Ch. 10); Criminal Code (Ch. 12); Dominion Controverted Elections (Ch. 13); Dominion Elections (Ch. 14); Gold and Silver Marking (Ch. 15); Government Railways (Ch. 16); Inland Revenue (Ch. 17); National Transcontinental Railway (Ch. 18); Representation (Ch. 19); Winding Up (Ch. 21) and Yukon Placer Mining (Ch. 22). Chapter 11, assented to on April 15, provides for the exercise of the electoral franchise by the Canadian troops in the event of a general election in Canada during their absence on active service.

Two Acts (Chs. 1 and 20) provided facilities for the supply of seed grain, fodder, etc., to farmers in certain districts of Saskatchewan and Alberta, which suffered severely from the prolonged drought of 1914.

THE BRITISH EMPIRE

EDWARD PORRITT

THE UNITED KINGDOM

Domestic Politics.—The administration of the United Kingdom at the opening of 1915 was still being conducted by the Liberal Government, with Mr. Asquith as Premier, which had been in power since the general election of December, 1910, and with various changes in personnel since the Liberals succeeded to office at the end of 1905. Since July, 1914, when the threat of war became ominous, there had existed a political truce under which the Unionist Opposition undertook to support the Government, on condition that no controversial legislation should be undertaken. In January, 1915, the House of Lords was in session for three days, although there were no sittings of the House of Commons. On the opening day of this brief session, a statement was made by Lord Kitchener in which he reviewed the military situation on all fronts, and also gave an account of the progress of recruiting and the supply of officers. Except for this statement, and for an announcement of Government policy in regard to conscription, little business was transacted, and on Jan. 8 an adjournment was taken to February. When the sittings of both Houses were resumed on Feb. 2, Parliament and the country were in an optimistic mood in regard to the war, and the relief from pressing anxiety showed itself on the part of the Opposition in restlessness under the restrictions it had laid upon itself under the political truce.

An undertaking was asked of the Government that no controversial legislation should be pushed forward during the session of 1915. In making an appeal for this pledge, the Marquis of Lansdowne stated that in the House of Commons no fewer than 200 members, of whom he thought that 150 belonged to the Unionist party, were absent from their places owing to the war; while in the Upper House 180 peers were thus absent. While offering to coöperate with the Government, Lord Lansdowne, for his party, disclaimed any responsibility for the policy of the Government, and also reserved to his party the right of criticism. A similar statement was made in the House of Commons by Bonar Law, the Unionist leader.

The Liberal Government continued to hold office under the political truce until the last week of May, when the Ministry was reorganized and a coalition Government came into office. The new Administration embraced the leading men of both parties, and it was officially announced that a seat in the Cabinet had been offered to John Redmond, leader of the Irish Nationalists. Mr. Redmond, while refusing to join the Government, offered his hearty support and coöperation, an offer which he loyally fulfilled during the remainder of the year. Mr. Asquith retained his position as Prime Minister in the new Government, and Sir Edward Grey was not disturbed at the Foreign Office. David Lloyd-George left the Exchequer to take the headship of the new Ministry of Munitions, and his place was taken by Reginald McKenna. Among the Unionists who took office were Mr. Bonar Law, previously the Leader of the Opposition in the House of Commons, A. J. Balfour, the Marquis of Lansdowne, Austen Chamberlain and the Earl of Curzon. The reconstructed coalition Ministry was constituted as follows:

Mr. Asquith	Prime Minister
Lord Landsdowne	Minister without portfolio
Sir S. Buckmaster	Lord Chancellor
Lord Crewe	President of the Council
Lord Curzon	Lord Privy Seal
Reginald McKenna	Chancellor of the Exchequer
Sir John Simon	Home Secretary
Sir Edward Grey	Foreign Secretary
A. Bonar Law	Colonial Secretary
Austen Chamberlain	Secretary for India
Lord Kitchener	Secretary for War
David Lloyd-George	Minister of Munitions
A. J. Balfour	First Lord of Admiralty
Walter Runciman	Pres. of Board of Trade
Walter Long	Pres. Local Govt. Board
Winston Churchill	Chanc'r of Duchy of Lancaster
Augustine Birrell	Secretary for Ireland
McKinnon Wood	Secretary for Scotland
Lord Selborne	Pres. Board of Agriculture
Lewis Harcourt	First Commissioner of Works
Arthur Henderson	Pres. Board of Education
Sir Edward Carson	Attorney General

Mr. Henderson, who went to the Board of Education, was leader of the Labor party and it was understood that he entered the Cabinet in order to be able to assist the Government in regard to questions of labor arising out of the war. Party strength in the new Government was in the following proportions: Liberals, 12; Unionists, eight; Labor, one, and non-party, one (Lord Kitchener).

Later in the year Sir Edward Carson and Winston Churchill sent in their resignations. F. E. Smith took the place of Attorney-General thus vacated by Sir Edward Carson, and Herbert Samuel was given the office of Chancellor of the Duchy of Lancaster in addition to his former office of Postmaster-General. In his letter of resignation, addressed to the Prime Minister on Oct. 13, Sir Edward Carson said that as he "was in entire disagreement" with certain conclusions arrived at by the Cabinet, which dealt with "far-reaching military questions affecting our allies as well as ourselves," he did not consider that he could either honorably or usefully continue to take part in the deliberations of the Government. Almost exactly a month later, Nov. 11, Mr. Churchill wrote, in a somewhat similar letter of resignation, that, knowing what he did of the present situation and the instrument of executive power, he could not accept a position of general responsibility for war policy without any effective share in its guidance and control.

The situation had somewhat changed between the resignation of Sir Edward Carson and that of Mr. Churchill. A small council, or inner cabinet, for the conduct of the war, had been formed, consisting of Mr. Asquith, the Prime Minister; A. J. Balfour, the First Lord of the Admiralty; Bonar Law, the Colonial Secretary; Lloyd-George, Minister of Munitions; and Mr. McKenna, Chancellor of the Exchequer. It was when he found that there was no place in this inner council for him that Mr. Churchill announced that he preferred to serve his country by joining his regiment in France.

According to the terms of the Parliament Act of 1911, the House of Commons elected in December, 1910, would have been dissolved in January, 1916. In November a Government bill was introduced, by which the lifetime of Parliament was extended by the whole period over which the war should last.

Finance.—There were two war budgets in 1915. The first was introduced by Mr. Lloyd-George in May. No new taxes were proposed in this budget and taxation remained on the level to which it had been raised by the first war budget, that of November, 1914, until Sept. 21, when Mr. McKenna introduced his first budget, the third budget since the beginning of the war. The taxation imposed by Mr. Lloyd-George's budget of November, 1914, was calculated to bring in extra revenue to the amount of £68,500,000 in a full year. Expenditures rose, however, from the normal level of 1913-1914, when income and expenditures nearly balanced at £198,000,000 to £561,000,000, while the revenue rose only to £227,000,000. Although it was plain in May that the increased revenues were wholly inadequate, Mr. Lloyd-George proposed no new taxes in his budget of May 4. The deficit of £333,000,000 was met by loans; but Mr. Lloyd-George gave warning that if the war was continued it would be the duty of the House of Commons to consider what further contributions the community could make to the conduct of the war. The balance sheet as submitted by the Chancellor of the Exchequer was: estimated revenue, £270,332,000; estimated expenditure, £1,132,654,000. This estimate included a vote of credit of £250,000,000 already passed, and further votes of credit, which the Chancellor of the Exchequer expected would be necessary, of £728,000,000.

New taxation, which was thus foreshadowed in May, was imposed in September. Mr. McKenna then proposed new taxes and increases in taxes which would yield an estimated revenue of £78,000,000 for a full year. These taxes would increase the revenue from the estimate of £272,000,000, which the taxation of November, 1914, would have yielded in the fiscal year 1915-1916, to £305,000,000 with the new taxation in force for the second half of the fiscal year (September to March), and would yield an income

of £387,000,000 for the fiscal year 1916-1917 when the new taxes will have been in force for the full year.

The largest increases in taxation in Mr. McKenna's budget of Sept. 21 were in the income taxes, the changes in which were as follows: all round increase for the full year, 40 per cent., and for the half year, 20 per cent.; exemption limit reduced from £160 to £130; abatement on incomes of £400 reduced from £160 to £120; abatement on incomes of £500 and £600 reduced from £120 to £100 and increases in the supertax on incomes of over £8,000 rising to 3s 6d in the pound. Without the supertax, the increases in the income tax were estimated to yield £44,400,000, and the supertax £2,685,000. The man with £4 a week was taxed £9 4s a year; the man with £5,000 would pay £1,029, practically a rate of 4s 1½d in the pound, while the man with £20,000 a year would have to pay in income tax £6,029, practically a rate of 6s in the pound. The remainder of the increased revenue was to be obtained in part from a tax of 50 per cent. on all profits exceeding £100 of any trade, manufacture or business whose profits since the war began exceeded the profits made in the year previous to the war. The estimated yield of this war-profits tax for a full year was £60,000,000; the tax was to be paid in addition to income tax. Increases in customs and excise duties and new duties on imports of motor cars, musical instruments, motion-picture films, clocks and watches accounted for the balance. The customs taxation was estimated to yield in a full year £25,070,000; and there were increased postal and telegraph and telephone charges which, it was estimated, would bring in nearly £5,000,000.

In the war budget of November, 1914, Mr. Lloyd-George estimated the cost of the Navy at £146,000,000, of the Army at £600,000,000, and of external advances to the Allies at £200,000,000. In September, 1915, Mr. McKenna estimated these charges at £190,000,000 for the Navy, £815,000,000 for the Army, and £423,000,000 for the advances to the Allies. The current daily expenditure up to September, 1915, had averaged three and a half millions sterling; but Mr. McKenna warned the House of Commons that the country would have to count on an average daily expenditure of £4,500,000, probably rising to £5,000,000 in the later weeks of the financial year.

The Munitions Campaign.—During the early months of the war there was much criticism of the Government for the inadequate provision of shells and ammunition. To meet the difficulty a new government department, the Ministry of Munitions, was formed in June, shortly after the reorganization of the Cabinet, and Mr. Lloyd-George was placed at its head, with Sir Percy Girouard as Comptroller-General. It was provided in the bill creating the new department that the office of Minister of Munitions should cease 12 months after the conclusion of the war. The powers of the Minister were defined as "such powers and duties in relation to the supply of munitions for the present war as may be conferred on him by His Majesty in Council." The bill was introduced in the House of Commons on June 4, and two weeks later an order-in-council was issued setting out the powers of the Munitions Ministry. In this order it was declared that the duty of the new Minister shall be "to examine into and organize the sources of supply and the labor available for the supply of any kind of munitions of war, the supply of which is in whole or in part undertaken by him, and by that means, as far as possible, to ensure such supply of munitions for the present war as may be required by the Army Council, or the Admiralty, or may otherwise be found necessary." It was further provided that certain duties be transferred to the Minister of Munitions from other departments or authorities. These included (1) from the Army Council the functions of the Major-General of the Ordnance, in relation to contracts, the supply of explosives, and the inspection of munitions; and (2) such functions as might be agreed upon in relation to work carried on at the Woolwich Arsenal, the Enfield small-arms factory, and the Waltham powder factory, and in relation to work carried on at any other government establishment used for the purpose of the manufacture

or supply of war munitions. The bill also gave the new Minister concurrent powers under the Defence of the Realm Act and power to make such contracts and institute such inquiries as he might consider necessary or expedient for the effective performance of his duties.

Immediately on undertaking his new duties, Mr. Lloyd-George went into the industrial parts of the country and addressed the working men. He appealed to them to show their patriotism by doing their utmost to increase the output of shells and other munitions. He warned them that it was no time for them to insist on the observation of trade-union regulations such as were then hampering government work. The first of these speeches was delivered in Manchester on June 3, and was addressed to a meeting of engineers. The Minister of Munitions assured these men that he was there to carry the most urgent errand ever told to the ears of a Manchester audience. Almost everything then depended on the workshops of Great Britain. The Russian allies had suffered a severe set-back. The Germans had achieved a great success. "To what," asked Mr. Lloyd-George, "is the German triumph due? It is due entirely to superior equipment, overwhelming superiority of shot and shell, of the munitions and equipment of war." "Have you read," he continued, "the story of the battle—200,000 shells concentrated in the course of a single hour on the devoted heads of the gallant Russians, 700,000 fired away in a single battle? Had we been in a position to apply the same process to the Germans on our front, broken their lines, driven them back the number of miles they have driven back the Russians, what would have happened? They would have been turned out of France; they would have been driven half-way across Flanders; they would have been well out of the country they have tortured and tormented with dastardly cruelty."

Mr. Lloyd-George then proceeded to speak of British unpreparedness for the war, an unpreparedness which, while it had put the nation at a fearful disadvantage, would be the apology and defence of the nation when the history of the war came to be written. The proof that Great Britain was innocent of the crime of precipitating the war on Europe was that she did not prepare for war. Nevertheless, the need of the moment was for greater preparedness and better organization. Although he had held the office only for a few days he had become convinced from overwhelming testimony that the nation had not yet concentrated one-half of its industrial strength on the problem of carrying the great conflict through successfully. He asked that all—employers and workmen—should put government work first, and pointed out that under the Defence of the Realm Act the Government already had power to control the employers and to take possession of any establishments that were required. Of the workers he asked that trade-union regulations that in any way interfered with output should be laid aside, and he especially laid stress on the importance of not interfering with the employment of women in work that had hitherto been done entirely by men. He suggested that the men organize for themselves the engineering resources of the country with a view to producing the great result in the way of helping the gallant forces at the front.

It was soon found, however, that something stronger than appeals would have to be used to overcome the tendency to labor disputes and to override the many hampering trade-union regulations that were checking output. On June 22, Mr. Lloyd-George introduced in the House of Commons the Munitions bill, which was aimed to give the Government control of the men working in the factories almost as complete as over the men in the trenches. The chief proposals for this mobilization of industry were: (1) there should be no strike or lock-out; any dispute must be referred to arbitration; (2) as many skilled men as possible should be brought back from the army and put into the factories; (3) seven days were to be given for the voluntary enrollment of skilled men in a mobile munition corps; (4) power was to be given to the Minister of Munitions to enforce the contracts entered into by these

volunteers. There would be government control of the workshops, and a munitions court, consisting of a president appointed by the Government, with an employer and a trade unionist as assessors, should have power to inflict penalties; (5) no man should be permitted to leave one yard and be taken on at another without producing a satisfactory certificate from the first employer; (6) trade-union regulations which restrict output must be suspended; (7) employers' profits were to be limited. The bill received the Royal assent on July 2.

The Welsh Coal Strike.—In July there was a great strike on the Welsh coal fields which lasted seven days. As the coal for the British Navy is obtained from the mines affected there was an attempt to apply the Munitions Act to this strike. In spite, however, of the fact that a proclamation was made under the terms of the Act, the men refused to go back to the mines and 200,000 men remained idle. Instead of attempting to apply coercion the Government offered new terms to the men and Mr. Lloyd-George and Mr. Runciman went to Cardiff to attempt a settlement. At the conference with the Ministers there were present 343 delegates, representing 141,346 members of the South Wales Miners' Federation. The terms, backed by the persuasive eloquence of Mr. Lloyd-George, proved satisfactory, and the men returned to work after an idleness that cost the workmen from £450,000 to £500,000 and restricted the output of coal by about one million tons.

Recruiting and Conscription.—All through the year a keen controversy raged in Great Britain concerning the necessity or advisability of conscription or some form of forced military service. The actual figures of the recruiting which went on actively from the first day of the war were never made public by the Government, and the newspapers that took the most active part in the controversy had no information on which to base their assertions that men were not coming forward in sufficient numbers. In June Mr. Lloyd-George made the assertion that it was not men that the Government needed so much as shells, that the Government had all the men it could equip. He did, however, allow that more and more men would be needed and there was no time during 1915 when urgent appeals were not being made to men to come forward and join the Army. To reinforce these appeals, and to make the work of the Government easier in case greater pressure had to be applied, a national Registration Act was passed early in July. It was introduced by Walter Long, as the registration was to be under the charge of the Local Government Board. Under the provisions of the Act forms were distributed to every householder and information was asked concerning every member of the household, male and female, between the ages of 15 and 65, with a record of the work which each was willing voluntarily to undertake in addition to the employment in which he or she was engaged. For the male members between the ages of 19 and 38 there was a special form in which the men were asked if they were willing to enlist for *the war only*. In November, the Government methods of recruiting were reorganized and Lord Derby was appointed as a kind of efficiency expert to carry out the work. Under his plan recruiting was greatly stimulated, but a serious disproportion in the number of single men enlisting caused the Government to decide late in the year on a modified form of conscription.

Commerce.—The commerce of the United Kingdom during 1915 was characterized by the immense preponderance of imports over exports, a preponderance that adversely affected the rate of exchange. In September there were particularly startling fluctuations in New York exchange, the pound sterling sinking as low as $4.48. Before this low level had been reached, however, an Anglo-French commission had been sent to New York to arrange for a large credit which should rectify the balance of exchange. The loan was fixed at $500,000,000 and this loan, combined with a considerable decrease in October in the adverse balance, restored the rate of exchange to $4.70 and it remained in the neighborhood of this figure during the balance of the year. (See also XIV, *Banking and Currency.*)

September showed the largest adverse balance of all the months since the war began. During that month the imports were £30,734,091 in excess of the exports, and there were many appeals to people in Great Britain to cut down the consumption of imported articles, not only for the sake of economy, but also with a view to redressing the trade balance. October showed considerable improvement and the figures for the ten months ending with Oct. 31 were as follows:

	1915	1914
Imports	£711,634,537	£573,791,657
Exports	315,060,651	379,350,173
Re-exports	82,782,519	83,976,069

With regard to the imports, the increase was divided among the classes as follows: raw materials advanced by £8,382,289; manufactured articles by £4,927,645; food, drink and tobacco by £3,050,307; and miscellaneous and unclassified imports by £52,881. In articles of food and drink, wheat fell in quantity by 3,776,423 cwt., and in value by £1,154,084; wheat meal and flour advanced in value by £142,813, with a reduction of 9,745 cwt. in quantity. The receipts of wheat from the United States fell by over 750,000 cwt., and from Canada by 2,000,000 cwt., and from India by 750,000 cwt. In dutiable articles tea stands out with an increase of 24,925,989 lb. in quantity and £1,428,145 in value, the receipts from India alone being increased by upwards of 20 million pounds. There was an advance in the imports of raw cotton of 955,339 centals in quantity and £2,953,719 in value, and sheep-wool imports increased by 22,812,700 lb. in quantity and by £1,069,574 in value. Even in October, when the trade balance was much better than in September, the excess of imports over exports was almost exactly twice as great as in October, 1913.

THE COLONIES[1]

Australia.—The cordial support of the Empire by all the self-governing colonies, which was offered as soon as the war broke out, was steadily continued throughout 1915. Mr. Asquith told the House of Commons at Westminster on Nov. 2 that Australia had contributed 92,000 men, who had actually been sent to the front. That the quality of the Australian troops was of the best was evidenced by the frequency with which they were mentioned in the dispatches. To support the war it was found necessary to levy new taxation, and in July an income tax was levied in the Dominion of Australia, at the rate of 3d in the pound on incomes of £157, 7d in the pound on incomes of £500, 10d on incomes of £1,000, and 5s on incomes over £7,750. In addition to the increased taxation, Australians made large voluntary contributions to Belgian relief funds. It was stated in May that New South Wales alone was then sending well over £1,000 a day for this purpose, and on Belgium Day, May 12, over £100,000 was collected as a special contribution. There was much trouble in the earlier months of the year with naturalized Germans and German residents who were not naturalized. But as the war went on less was heard of these disturbances. The Germans who showed themselves objectionable were interned, and the feeling of the country against Germany became so pronounced that it was no longer safe for naturalized Germans to indulge in free comments. One important result of the disappearance of Germans from Australia was reported by Mr. Hughes, the Federal Attorney-General, from Melbourne, on Oct. 25. It was that the Australian metal industry, which before the war had been controlled practically entirely by Germans, was completely freed from the grip of Germany. (See also XVIII, *Zinc*). Previous to 1915, the whole supply of metal concentrates produced by Australian mining companies was distributed by German firms to the smelting plants in Germany, Belgium and France. With the outbreak of war this outlet ceased and the mines had to close down, as the smelting plants in England and Australia were inadequate to deal with the concentrates, from which principally lead and spelter are extracted. A scheme

[1] Except Canada, covered in a separate article *supra*.

was then arranged by the leading Australian mining companies, in conjunction with the Government, for extending the smelting plants in Australia, and Mr. Hughes's announcement indicated that the scheme had been carried to success. As a provision for the soldiers returning from the front New South Wales reserved 25,000 acres of wheat-growing land and 250,000 acres of irrigation land. During the year Mr. W. M. Hughes succeeded Sir George Reid as High Commissioner in London.

New Zealand.—New Zealand, like other parts of the Empire, went into the war with more enthusiasm than method; but as time went on, without diminution of enthusiasm or loyalty, more scientific methods were adopted. According to Mr. Asquith's statement of Nov. 2 the contribution of men from New Zealand was 25,000. In October the Dominion passed a National Registration Act by which all men between the ages of 17 and 60 were called upon to register and to give particulars of status, occupation, physical condition, military experience and number of dependents. Men between 19 and 45 were asked to say whether they had volunteered, or whether they were willing to volunteer, and if so, whether they would join an expeditionary force; or, if unwilling or unable to volunteer, whether they were willing to serve in any other capacity.

New Zealand had the distinction of making the most generous provision for its disabled soldiers of any country in the civilized world. By the Pensions Act passed during the session of 1915, a single man totally disabled is to receive 25s a week, a married private totally disabled will receive £97, 10s a year with £13 extra for each child up to a total of £156 a year. To provide the money for these pensions and for other war expenditures the budget of 1915, which was laid before the Dominion Parliament by Sir Joseph Ward, Minister of Finance, proposed extra taxation amounting to £2,032,000. The chief sources of extra income were: land and income taxes, £619,600; increased postal and telegraph charges, £380,000; increased freight and passenger rates on the government railways, £360,000; increased customs duties, £285,000. The income-tax rates were from 16d to 2s in the pound, and the tax was extended to incomes from agricultural land which had formerly been exempt, as a concession to the farmers.

South Africa.—Of all the British colonies South Africa had the largest part in the actual conduct of the war, and in his speech of Nov. 2 Mr. Asquith paid a well-deserved tribute to the work of General Botha. "South Africa," he said, "having completed the reduction, after a most successful and brilliant campaign, of German Southwest Africa, has supplied important contingents for service in East and Central Africa, and in addition has furnished 6,500 men for service in Europe." Even this does not complete the tale of work accomplished by South Africa, for there was treason and open rebellion within her own borders that had to be quelled, as well as a foreign enemy to be met and conquered. (See also *The European War, infra.*)

The results of the capture of the German Southwest African colonies are already being forecast by the statesmen of British South Africa. At the South African Congress, which was held on Aug. 19, previous to the general election, General Botha promised that thousands of South African citizens would be given an opportunity of settling in these captured regions. The land, he said, was suitable for agricultural settlement and for stock raising. The climate of much of the country was healthy, and with loyal settlers these new colonies would be a source of strength to British South Africa and to the Empire. At this Congress General Botha again emphasized his desire to be the leader of one united people, and deprecated any mention of the pernicious two-stream policy. All memory of division between Boer and Briton was now wiped out and British South Africa was one country, the home of one nation.

The effect of this appeal was seen in the results of the general election which were announced on Oct. 27. The division of parties in the Parliament was as follows: South African Party or Ministerialists, 54; Unionists, 40;

Nationalists, 27; Independents, five; and Labor, four. The Unionists and Independents, in addition to the Ministerialists, support General Botha's "one-stream" policy, leaving an opposition of only 27 Nationalists in a House of 130 members. The surprise of the election was the small showing made by the Labor party. The Rand, where Labor is strongest, gave the Unionists six seats more than was expected during the campaign before the election. Accepting the returns as an expression of confidence from the country, General Botha decided to remain in office and to retain his Cabinet without change. The results of the election were received with great disappointment in Germany, which had counted upon a stronger anti-British feeling in the colony.

India.—The response of India to the call for aid to the Empire was as quick and as emphatic as the response of any of the self-governing colonies. The bravery of the Indian troops at the front is part of the record of the war; but the effect of this support of Great Britain by India on Indian civil affairs and Indian self-government is expected to be far-reaching and of great importance. In return for the splendid aid given by India, the Imperial Legislative Council made the request that India be officially represented at the next Imperial Conference. Hitherto only the self-governing colonies have had such representation, but it was felt to be an anomaly that the greatest and most populous portion of the Empire should be absolutely ignored at this council of Empire. The scheme proposed was that India should be represented by the Secretary of State for India, and by one or two official representatives from India, nominated by the Secretary of State in consultation with the Viceroy. Under the Morley-Minto reform scheme for India the second triennial term of the various Indian legislatures would have expired at the end of 1915; but the Government of India, with the consent of the Secretary of State, arranged that the terms of the members should be lengthened by six months. Unless there is another postponement, therefore, the Indian elections will take place in the summer of 1916. During the year there were many rumors of risings and insurrections in India; but the censorship was so strict that it was impossible to determine how much truth there was in these rumors. It is certain, however, that the effort to stir up a holy war against Great Britain by appealing to the Mohammedan population proved an entire failure; and it is also certain that the loyalty of the Indian chieftains proved a great and disagreeable surprise to Germany.

Other Colonies.—Of Egypt little has been reported during the year. Military reasons have prevailed in enforcing a strict censorship, and except for occasional mentions of military operation the British newspapers have been almost silent concerning this new British protectorate. The smaller colonies, both self-governing and Crown colonies, almost all sent help and men in response to the call of the Empire. Newfoundland sent 1,600 men, in addition to substantial contributions of men to the British Navy. The West Indies sent 2,000 men, and there were contingents from Ceylon and Fiji. In Rhodesia, East Africa, and the West African colonies important additions were made to existing defensive forces, and in every colony and dependency, no matter how remote from the scene of active military operations, the authorities made provision for better and more adequate defense.

CONTINENTAL EUROPE AND ASIA

Edward M. Sait

FRANCE

The French Government having returned to Paris (*A. Y. B.*, 1914, p. 140), the Chambers were convened on Dec. 22, 1914. The Cabinet expressed a firm intention of carrying the war to final victory and asked for the appropriation of $1,700,000,000. In applying $60,000,000 to indemnify persons whose property had been damaged or destroyed by the German occupation, the Government apparently committed itself to the policy of pub-

lic responsibility for losses of this character. In order to meet current expenses the issue of national defense bonds was further extended. Indeed the aggregate amount raised in this way up to November, when resort was had to a popular loan, had reached $2,400,000,000. The new loan offered in November proved attractive to investors, for, besides being immune from taxation and bearing interest at five per cent., it was not repayable till 1931. The financial outlay on the war, increasing steadily from month to month, had aggregated 28,200,000,000 francs by the end of 1915. As in Great Britain, it was felt desirable to have the burden carried as far as possible by current taxation. For 1916 a tax on war profits was imposed, this falling not only upon government contractors but also upon business firms. French commerce continued to be seriously affected by the war. In the first ten months of 1915 the exports amounted to $472,083,404, as against $855,581,352 for the corresponding period of 1914. Imports, on the contrary, increased from $1,105,606,290 to $1,270,569,952.

Parliamentary criticism of the Cabinet, as being too autocratic and too independent of the Chambers, began to develop in June, and gradually concentrated on Millerand, the Minister of War. First, he was attacked for unwillingness to delegate his functions to those less burdened with work; as a result the services of transport, sanitation and munitions were entrusted to three Under Secretaries of War, Albert Thomas being appointed Under Secretary of Munitions. The withdrawal of the distinguished Republican officer General Sarrail from his command because of a mishap became the next grievance; concession was made by appointing him to command in the Dardanelles. Finally, late in August, when Millerand had defended a subordinate believed to be responsible for defects in the sanitary service, the Socialists and Radical-Socialists demanded a secret session of the Chamber and a detailed statement of the military situation. An eloquent appeal by the Prime Minister relieved the tension and secured a vote of confidence. But unfortunate developments in the Balkans, followed by the resignation of the Foreign Minister (Delcassé), revived the attacks on Oct. 13. The diplomatic and military conduct of the Government in the Balkans was severely criticized; and although the Chamber expressed confidence in the Cabinet by a majority of 372 to 9, more than 150 members (largely Socialists) declined to vote. Unable to command the support of all parties, Premier Viviani resigned on Oct. 28. Next day a coalition Cabinet was formed under Aristide Briand, who himself assumed the portfolio of Foreign Affairs. The other members of the Cabinet were: Jules Cambon (general secretary of the Ministry of Foreign Affairs), De Freycinet (State), General Galliéni (War), Viviani (Justice), Malvy (Interior), Lacaze (Marine), Ribot (Finance), Painlevé (Instruction and War Inventions), Sembat (Public Works), Clementel (Commerce), Doumergue (Colonies), Malines (Agriculture), Matin (Labor), and (without portfolio) Combes, Bourgeois, Cochin and Guesde. There were also eight under secretaries. Announcing the ministerial policy, Briand declared on Nov. 3 that France was determined to carry the war to victory and durable peace. He described the measures which had been taken to ensure closer coöperation among the Allies, the visits of General Joffre to England and Italy having borne fruit in coördinated action between the general staffs. As to the Balkans, Great Britain and France were in complete accord and would never abandon Serbia. The Chamber approved of this declaration by a vote of 515 to 1. That the Chamber had no thought but for the complete success of French arms was seen in its refusal to listen to a Socialist deputy who argued against the annexation of Alsace-Lorraine at the close of the war.

In June new measures were adopted to increase the supplies of munitions. Skilled mechanics, who had been drawn from the factories by mobilization, were now brought back, a mixed commission of employers and employees being appointed to supervise the work. Before the middle of the month more than 650,000 men were employed in producing munitions. A

bill prohibiting the sale of absinthe, enacted in January, was followed the next month by more stringent regulations regarding the sale of all alcoholic liquors.

RUSSIA

The series of Russian military reverses which began in May and lasted till October served only to emphasize the solidarity of the nation in its resolution to carry the war to a successful issue. Efforts were directed towards increasing the supply of munitions. In June a central board was established, including the Minister of War, the President of the Duma, members of the Council of the Empire, and representatives of industry and commerce; and in August the board was strengthened by the addition of nine members of the Duma and invested with final authority to regulate supplies of all kinds, even to the extent of fixing prices and controlling transportation. Through local sub-committees the resources of the country were gradually concentrated on this supreme object. By arrangements with the Japanese Government, moreover, enormous supplies were brought over the Trans-Siberian Railway. The combined results of these measures were seen in the aggressive spirit of the Russian armies during the month of October. Various official announcements also indicated that during the winter two million or more recruits would be trained in preparation for a new offensive in the spring of 1916.

The determination to conduct the war more vigorously found expression in other ways. On June 28 General Sukhomlinoff, Minister of War since 1909, was superseded by General Polivanoff, formerly assistant minister, whose appointment was popular in Duma circles; two months later General Alexieff became Chief of Staff; and on Sept. 7 the Czar himself assumed active command of the armies, transferring Grand Duke Nicholas to the Caucasus. This last change came as a surprise to military observers, who had formed a high opinion of the Grand Duke's strategy; the Czar's action, however, was apparently taken because of its importance in impressing the nation with the necessity of steadfast resolution to retrieve disaster and carry the war to victory. As in France and Great Britain, the exigencies of the war brought about Cabinet reorganization. The fall of Sukhomlinoff was followed in October and November by the resignation of four other ministers, including Krivoshein, Minister of Agriculture (who had formerly been considered as a possible successor to the Premier), and S. V. Rukhloff, Minister of Communications. In the case of the latter it was understood that, having no technical qualifications for the post, he would be less fitted for the work of reorganizing the system of railroad transportation now so severely strained by military requirements. A new precedent was established in October when Alexei Khvostoff, the new Minister of the Interior, decided to retain his seat in the Duma, where he had been a leader of the Extreme Right.

The Duma, in its early session in February, formulated demands for greater popular rights and the abolition of civil and religious disabilities. When it reassembled on Aug. 1 a new spirit of confidence characterized the proceedings. The Liberals particularly showed a disposition to participate more actively in the affairs of the empire. Through the efforts of Miliukoff, leader of the Cadets, and Guchkoff, leader of the Octobrists, all the parties except the Extreme Right, the Nationalists, and the Social Democrats were formed into a progressive *bloc* commanding 300 out of 439 votes. They formulated a comprehensive programme: autonomy for Poland and a conciliatory policy for Finland; full civil rights for the Jews; abolition of feudal privileges in the Baltic provinces (without indemnity); reform of the zemstvos; recognition of trade unions; extension of the suffrage; responsibility of ministers. A movement was set on foot to impeach Sukhomlinoff for his failure to provide the army with munitions. The Prime Minister felt that this programme, though not intended to be immediately applicable, would have an unfortunate effect upon the people and divert energy from the prosecution of the war. On Sept. 16, therefore, the Duma was prorogued for two months.

At once a storm of public disapproval broke. Strikes, riots, and general confusion seemed imminent. Only the patriotism of the leaders prevented a disastrous general strike. Conferring with the Czar, who apparently reassured them regarding the future of the Duma, they agreed to modify the programme in a conservative sense. That their attitude met with the general support of the country seems evident from the results of the autumn elections in which 63 members of the Council of the Empire were chosen. The new *bloc* made substantial gains, winning 28 of the 43 zemstvo representatives and all the eight representatives of the universities and industries; and aside from their growth in numbers, encouragement was taken from the fact that such influential men as Guchkoff, Michael Stakovitch and Prince Eugene Troubetskoy were among the new members.

War finances caused great concern, because Russia, unable to export her products, had to face a most unfavorable rate of exchange in the purchase of war supplies abroad. The Minister of Finance, P. L. Bark, however, visiting Great Britain and France, arranged for substantial assistance. In April, Great Britain and France each placed at the disposal of Russia a credit of $125,000,000, eventually to be liquidated by shipments of grain; in September further advances were made; and apparently the Allies entered upon the project of forcing the Dardanelles chiefly for the purpose of liberating Russia's stores of foodstuffs for exportation. Prohibition, which had been generally enforced in November, 1914 (*A. Y. B.*, 1914, p. 142), complicated the questions of revenue; for, aside from a few millions derived from the sale of industrial spirits, the Government lost the whole of its revenue of nearly $500,000,000 which the spirit monopoly had produced. The peasants, however, could bear new taxes without difficulty; according to the Minister of Finance the peasants deposited in savings banks during January, 1915, some $30,000,000, or nearly twice as much as they formerly deposited in a whole year. The Government therefore imposed new taxes on passenger and freight traffic and increased many existing taxes, such as the internal taxes on real estate, insurance, documents, business enterprises, sugar, petroleum, pressed yeast, cigarette papers and matches. The budget for 1915 showed an estimated expenditure of $1,617,154,207. The debt contracted during the first 13 months of the war aggregated $2,407,883,000.

On June 25 the Czar appointed a commission consisting of six Poles and six Russians under the presidency of Premier Goremykin to work out the preliminaries of Polish autonomy. This was the first definite step towards the realization of the solemn promise of automony made the previous summer (*A. Y. B.*, 1914, p. 142). Two months earlier, however, the Czar had extended the Russian system of town government to Polish towns, notwithstanding the fact that the Council of the Empire had refused to accept a similar project of Premier Stolypin several years before. This decree provided not only that the Polish language might be employed in zemstvo debates but that it should be employed, as well as Russian, in official records and publications. Care was also taken to give the strong Jewish element some degree of representation. The circumstances of the Jews, both before and after the German occupation of Poland, appear to have been unfortunate. (See also XXIX, *Judaism.*) According to report, they were robbed and maltreated, expelled from their homes and in some cases murdered by mobs. Nevertheless the Government did something to relieve their distress, and on Aug. 21, owing to the exigencies of the war, the residential restrictions were modified so as to permit Jews to reside in any town of Russia except Moscow and Petrograd. Early in the summer anti-German riots occurred in Moscow, the damage to property being estimated at $20,000,000.

ITALY

The foreign policy of the Italian Government was defined by Premier Salandra in December, 1914, as one of watchful neutrality. In Parliament, when requested to make a more specific declaration, he said: "What I can guarantee is that the Govern-

ment will follow a purely Italian policy. . . . Now is the time to be silent and act." That the country felt disposed to accept his leadership without further questioning the votes of the Chamber clearly demonstrated. The Government continued to push its military preparations with the greatest vigor. A loan of $200,000,000 for military expenses was authorized and promptly subscribed. The garrisons on the Ægean Islands held by Italy were heavily reinforced and fortifications were erected. In February reports indicated that the so-called "third category," consisting of men exempt from service in time of peace, had been brought under training as a territorial-defense force. In spite of the military preparations and the transfer of the volunteer army to Tripoli, unemployment continued to be widespread and to occasion more or less serious disturbances. The return to Italy of large numbers of Italians formerly employed in belligerent countries and the stoppage of the normal influx of tourists helped to complicate the problem. Moreover, notwithstanding the abolition of grain duties, the reduction of freight charges both on railroads and subsidized steamship lines, and the prohibition of export, the prices of the major foodstuffs remained abnormally high. During the winter there were bread riots in several cities.

When Parliament reopened on Feb. 18, it was generally felt that a decision for or against war with Austria could not long be postponed. The cleavage of opinion between the parliamentary groups had grown more definite, sentiment in favor of the Allies being particularly emphatic among the Republicans, the Reformist Socialists, Radicals, and Nationalists. Salandra secured the passage of a national defence law which put an embargo on the shipment of contraband, prohibited the newspapers from publishing military information, and empowered the Government to appropriate Italian inventions for the use of the Army and the Navy. He then adjourned Parliament until May 12, explaining that, while there was no intention of ruling independently of the Chambers, the present crisis demanded the Cabinet's undivided attention. During the early part of May the attitude of Government and public alike seemed to indicate an ultimate decision for war. Partial mobilization was ordered on the 9th, and large forces began to concentrate at Verona and other points in the North. Not only did popular demonstrations in the large cities urge the Government to action, but Giolitti, the former Premier, became the object of insistent attacks because of his efforts in favor of peace. On the 13th Salandra tendered his resignation, declaring that the Cabinet did not possess that general support of all the groups which the gravity of the situation required; and only when Giuseppe Marcora, President of the Chamber, and Paolo Carcano, a member of the outgoing Cabinet, refused to supplant him, did he consent to the King's request that he remain in office. During the crisis public apprehension of intrigue on the part of Giolitti had led to serious rioting which necessitated the use of the military; and the relief which the triumph of Salandra occasioned found expression in parades and other evidences of rejoicing. Events now moved rapidly. Parliament entrusted the Cabinet with full powers for the conduct of war; martial law was proclaimed in a large part of northern Italy; complete mobilization of army and navy was ordered; and on May 23 war was declared against Austria-Hungary. (See also III, *International Relations.*)

In October the Government announced an internal loan of $35,000,000, taking the form of one-year six per cent. notes. The purpose was to give stability to exchange and pay for military supplies. On Oct. 20 a decree was issued creating new taxes and increasing other taxes for the duration of the war.

On Jan. 13 and 14, in the whole of central Italy and especially in the region about Avezzano, there were violent earthquakes which resulted in the loss of some 30,000 lives and $60,000,000 worth of property. Sixteen towns were completely destroyed. The Government appropriated $1,000,000 for relief work and announced that the help of other countries would not be accepted. (See also XXIII, *Earthquakes and Volcanoes.*)

GERMANY

Early in the year newspaper despatches seemed to indicate that the economic condition of the German Empire remained strong and that, in spite of the British blockade, the shortage of food supplies had entailed no very serious privations. Nevertheless, the entire control of foodstuffs and military supplies was taken from the states and assumed by the Imperial Government, a central court of arbitration being erected to determine all questions regarding the maximum prices of commodities. Maximum prices were fixed for coffee, tea, cocoa, bread, potatoes and other vegetables, pork, milk, butter, fruits and other commodities. First had come a preliminary measure fixing the maximum price of potatoes and other products and making mandatory the use of rye and potato flour in the baking of all bread; then, on Jan. 26, a sweeping decree which required owners to report their stocks of wheat, corn, and flour, and provided for purchase by the Government at a fixed price. (See also I, *American History.*) Imported grain, though not subject to confiscation, must be sold either to the grain monopoly company or to the communes. This measure was deemed necessary in order to ensure a regular and sufficient supply of breadstuffs until the threshing of the new harvest. To facilitate the work of distribution by the Government a limited bread ration was fixed, the daily per capita consumption of bread flours of all kinds being limited to two kilograms. Bread tickets began to be issued on Feb. 12. Provision was also made for reducing the number of live stock in view of the fact that earlier regulations had not prevented the feeding of grain to cattle. The municipalities were empowered to expropriate live stock and lay up stores of preserved meat. Simultaneously all stocks of copper, tin, aluminum, lead, antimony, and nickel were ordered reserved for military use. On April 1 regulations designed to prohibit any further rise in the price of fodder were promulgated; the conservation of the supply was also provided for. In the autumn reports of distress and rioting became more and more specific. Although these were denied by the Government as inventions of the enemy press, they were confirmed to some extent from German sources. *Vorwaerts* on Oct. 10 estimated that since the opening of the war the cost of necessities for a workingman's family had increased from 75 to 100 per cent. without any corresponding increase in wages; and an economist, writing in another Berlin paper, fixed the increase at 64 per cent. and held that suffering would increase in the winter. On Nov. 30 the President of the Reichstag admitted that the scarcity of foodstuffs was bearing hardly upon the poorer classes, the supply of grain and potatoes alone being sufficient.

Indirect evidence seemed to be provided by the appearance of a peace propaganda. In the Prussian diet, on March 2, the prominent Social-Democrat, Karl Liebknecht, remarked that everything remained as before the war; in the press there was almost an apotheosis of militarism, of the monarchy, and of the three-class suffrage; doubtless victory would be represented as due to the undemocratic suffrage. These remarks precipitated a scene and led the Conservatives, the Free Conservatives, the National Liberals and Center party to leave the chamber in protest. Notwithstanding the attitude of Liebknecht and the abstention of some of the Social-Democrats from voting on the war credits, the party continued to give support to the Government (see also XV, *Socialism*). That opposition was growing within the party, however, became evident when the prominent Berlin deputy, Ledebour, resigned from the executive committee of the party in February and when some of the party organs began to display a hostile attitude. On June 9 an open letter to the executive committee of the party was signed by 700 Social-Democrats, including 15 deputies and 26 leading journalists. The party, it urged, should demand the immediate termination of the war, since the ruling class were openly bent upon territorial conquests. The committee, in replying two weeks later, justified the course which the party had taken, but declared that the party was op-

posed to all wars of conquest and used this significant sentence: "We demand of the Government that it make known its readiness to enter upon negotiations in order to put an end to this bloody conflict." *Vorwaerts*, which published this reply, was suppressed for a time in consequence.

The first German war loan (*A. Y. B.*, 1914, p. 141) yielded more than the Government had asked for. In March equal success was achieved by a second loan, which was issued at 98½, with interest at five per cent., and which was not redeemable till October, 1924. The subscriptions amounted to 8,560,000,000 marks. Many small investors were attracted, the denominations of the bonds running as low as $25; more than 2,691,000 separate persons purchased bonds, as against 1,177,000 in the case of the first loan. The third war loan was offered early in September at 99, bearing interest at five per cent.; when the subscriptions closed on September 22 more than 12,000,000,000 marks had been offered in no less than 3,551,000 applications. The value of a mark, however, had sunk to 18 cents by December. The budget was laid before the Reichstag on March 10. It showed an estimated expenditure of 13,000,000,000 marks, three-quarters of which, being war expenditure, was to be raised exclusively by loans. On this occasion, as in December, Liebknecht was the only member to oppose the military appropriations. While provision was made for maintaining the redemption of the public debt, the Secretary of the Imperial Treasury recommended no immediate measure for redeeming the war debt. On Dec. 3, however, he informed the Reichstag that, at the conclusion of peace, the whole cost of the war would be thrown on the Allies. "The inciters of this war have earned for themselves the leaden weight of the billions."

On Aug. 19 the Reichstag reassembled. The Chancellor, recounting the diplomatic events which had preceded the outbreak of war, made statements which reflected on the honesty of Sir Edward Grey. The British Foreign Minister, it was claimed, in his last conversation with the German Ambassador, had represented himself as opposed to the crushing of Germany, since Germany might later on help England against Russia; and he believed that war between the two countries would make it possible for England to render greater services to Germany at the conclusion of peace than if she remained neutral. Referring to the Poles, he believed that, liberated from the Russian yoke, they could contemplate a happy future and develop the individuality of their national life. In July the Imperial Government published an official reply to the Bryce report on the Belgian atrocities (see *The European War, infra*). The main contention was that the Belgians had invariably violated the Geneva Convention by carrying on a deliberately-planned guerilla warfare. Down to Sept. 28 Prussian casualties in the war were 1,916,118.

AUSTRIA-HUNGARY

The financing of the war proved more difficult in the Dual Monarchy than in Germany. Peculiar interest attached to the progress of the internal loan of $670,000,000, opened for subscription in November, both because of the extraordinary measures which the Government apparently undertook to ensure its success, and because of the persistent reports of popular disaffection. The official announcement, in January, that the entire loan had been subscribed, seemed, when compared with the heavy oversubscription of the far greater loans in Germany and Great Britain, to give support to unfavorable inferences. Although Germany had advanced $500,000,000 in April, it became necessary in the next month to float a new internal loan. No efforts were spared to ensure its success, the Government press making pointed reference to the profits which landed proprietors had made in the sale of grain and which contractors had made, sometimes by fraud, in supplying the Army. Nevertheless, by the end of June, only $300,000,000 had been subscribed. It was reported on Nov. 10 that subscriptions to the third Austrian war loan had reached $803,000,000.

In January Count Leopold von

Berchtold resigned as Foreign Minister and was succeeded by Baron Stephan Burian von Rajecz, a member of the Hungarian Cabinet. The retirement of Berchtold was said to be due largely to his failure to work harmoniously with the Hungarian Premier, Count Tisza. Reports of anti-war demonstrations in Hungary were frequent, especially in the early winter, during the first Russian advances in force upon Hungarian borders. There were reports also of friction between the Austrian and Hungarian Governments regarding the participation of Austria in the use of the Hungarian grain crops. Following the promulgation of a new mobilization order, late in January, outbreaks were reported in several parts of the Empire, but particularly among the Slavs of the South. It was announced in March that the reservists between the ages of 28 and 42, who had been rejected as unfit, would be summoned to the colors and reëxamined.

The steady rise in the price of foodstuffs, due in large measure to the stoppage of imports, compelled the Government to follow the course previously adopted in Germany. On Feb. 26 the seizure of all grain and flour in the empire was decreed, and next month a system of per capita distribution was inaugurated in large cities. The necessity of conserving the food supply led the Government of Hungary to sequestrate the entire cereal crop with the exception of maize and to establish under the Department of Commerce machinery for regulating the whole grain trade, even including supplies for the Army. The influence of the great landowners, however, prevented any lowering of the maximum prices after the harvest of 1915; and in the autumn the high cost of foodstuffs, combined with the reduction of wages, brought great hardship upon the working classes. The price of meat had advanced three or four hundred per cent. In September all factories making cotton yarn were closed by decree and required to deliver their cotton stock for the use of the Army. This decree affected Czech industries especially. At the close of November three members of the Austrian Cabinet, the Ministers of Finance, Commerce, and the Interior, resigned. No official explanation was given, although it was rumored that they had favored the negotiation of a separate peace with Italy.

GREECE

The highly complicated situation in the Balkans and the divergent policies favored by the Prime Minister, Eleutherios Venizelos, and King Constantine led to a political crisis in Greece in March. Venizelos favored immediate participation in the war on the side of the Allies, this involving the despatch of an army to coöperate with the French and British in their effort to open the Dardanelles; the King, advised by his general staff, felt that such a step might leave Greece helpless before a possible Bulgarian advance into Macedonia. On March 6, therefore, Venizelos resigned, announcing at the time that his party would not give support to any other Cabinet. He was succeeded, after some delay, by Demetrios Gounaris, who stated that the protection of national interests required the observance of neutrality and that, "faithful to the alliance with Serbia," he would pursue a "watchful policy" in complete accord with Rumania. Opposed by the majority in the Chamber, he secured the King's consent to a month's adjournment, followed by dissolution. This course raised much criticism of the King and brought his motives under suspicion. In the general elections, which were held on June 13, Venizelos obtained 186 of the 316 seats. When the Chamber met on Aug. 16, four weeks after the time originally fixed, the Government were decisively beaten on the first important division and resigned. Venizelos thereupon assumed office, retaining himself the direction of foreign affairs. He took the view that if Bulgaria, joining the Central Powers, should invade Serbia, Greece would be bound by treaty obligations to render military assistance to Serbia. He mobilized the Greek Army on Sept. 23 and secured from the Allies the promise of 150,000 men. When the first detachments landed at Saloniki, however, he found it necessary to make formal protest against the violation of Greek neutrality; and although on Oct. 5

the Chamber, by a vote of 142 to 102, gave evidence of its unshaken confidence, the King forced the Cabinet out of office on that very day. A new Cabinet, formed ten days later by Alexander Zaimis, included Gounaris (Interior), Yanakitsas (War), and Rhallis (Justice). Zaimis announced that Greece would maintain a position of armed neutrality for the present and adjust her conduct to the march of events. He did not ask a vote of confidence; but Venizelos promised support so long as the principles of his policy were followed, the question as to war being "when" and not "whether." That support was withdrawn on Nov. 4 after Zaimis had refused the British offer of Cyprus as the price of Greek intervention in the war. Defeated by a vote of 147 to 114, the Cabinet resigned. Three days later Stephanos Skouloudis assumed office, retaining all the members of the outgoing Cabinet except Zaimis. He telegraphed to the French Government that Greek neutrality would have "the character of sincerest benevolence towards the Entente Powers." On Nov. 10, in spite of the fact that a great part of the electors had been mobilized in the Army, the King dissolved the Chamber. The elections, which took place on Dec. 19, gave the Government a majority of the Chamber, most of the party of M. Venizelos abstaining from voting. Late in November the Allies brought pressure to bear upon the Greek Government to secure a promise that their armies, if forced back over the Grecian frontier, would not be interned. (See also *The European War, infra;* and III, *International Relations.*)

OTHER EUROPEAN COUNTRIES

Turkey.—Very little news of an authentic kind reached the outside world as to the finances and internal condition of Turkey. On Oct. 3 a committee of distinguished Americans made public a report of its investigation into the alleged Turkish atrocities in Armenia. Basing their conclusions on data of "unquestioned veracity, integrity, and authority," they found that "crimes now being perpetrated upon the Armenian people surpass in their horror and cruelty anything that history has recorded during the past 1,000 years." Lord Bryce, speaking in the British Parliament, estimated that 800,000 had been slain. There was not a case in history, he said, since the days of Tamerlane, when a crime so hideous and on so gigantic a scale had been committed; it was a deliberate and premeditated plan to exterminate a nation. On Oct. 12 the American Ambassador to Turkey reported that the massacres had been renewed.

Portugal.—Political dissension assumed a serious character in Portugal during the year and threatened the very existence of the Republic. The Democratic Cabinet of Victor Coutinho (*A. Y. B.*, 1914, p. 146) managed to maintain itself for little more than six weeks, its overthrow being accomplished through the influence of the Army. Gen. Pimento de Castro took office on Jan. 29. His indefinite postponement of the elections and failure to summon Parliament, his alleged intrigues with the Monarchists, and his weak attitude toward German aggression in Angola developed apprehensions among the radical Republicans. Joao Chagas, who had been the first Premier of the Republic, denounced Castro as a military dictator and resigned his post as Minister to France. On March 6 a Congress of Democrats, held at Lemago, proclaimed the "Republic of Northern Portugal" and elected Gen. Antonio Barreto to the Presidency. In the week of May 9 a concerted insurrection began in Lisbon, Oporto, Coimbra, and other cities. The sailors of the Navy mutinied and, after killing their officers, bombarded the capital. By the 16th the revolution was an accomplished fact, Castro being a prisoner and Joao Chagas Prime Minister in his stead. Although Chagas was dangerously wounded by a political opponent and thus forced to resign on May 25, the same Cabinet continued in office under José de Castro, who was sustained in the June elections. On Nov. 30 a new Cabinet, composed of members of the Democratic party, was formed by Alfonso Costa, who himself assumed the portfolio of Finance.

On May 29 Theophile Braga was elected President for the unexpired

term of Manuel de Arriaga, who had resigned because of his failure to reconcile the contending political factions. On Aug. 6 the National Assembly elected as the new President, Bernardino Machado, who, like the Prime Minister, entertained strong pro-British sentiments. Monarchical risings occurred in northern Portugal and necessitated the proclamation of martial law on Aug. 29.

Spain.—In view of the conditions brought about by the war the Spanish Government prohibited in March the exportation of certain foodstuffs and minerals, while laying export duties on others. An attempt was made to float a loan of $150,000,000, issued at par and bearing 4½ per cent. interest, but only a small fraction of the amount was subscribed. When, on June 22, Dato, the Prime Minister, offered his resignation because of the failure of the loan, the King persuaded him to remain in office. A fresh crisis arose in November when the Minister of War introduced a bill for army reform, criticism of the military administration widening into a general attack upon the Cabinet. A vote of confidence, however, gave Dato a stronger position in the Chamber. He announced during the debates that there was no possibility of Spain's entering the European War. Dato, however, resigned on Dec. 6 and Count de Romanones formed a new Ministry.

Norway.—In November a loan of $4,000,000, made necessary by the extraordinary military expenses, was authorized by the Norwegian Government and was promptly taken up by a banking syndicate. In January, by an authorization for the expenditure of $12,000,000, the Government embarked upon the policy of developing, under state ownership and operation, the principal water powers of the country, for the purpose chiefly of generating electricity for the state railroads. Simultaneously, the electrification of the Drammen-Christiania road was begun. On Oct. 11 women voted for the first time under the new electoral law which grants them the suffrage irrespective of the amount of income tax paid, that is, on the same basis as men. Great resentment was manifested in August when a German submarine seized the mails on board a Norwegian steamer bound for England; formal protest was made to Berlin.

The Netherlands.—The resources of the Netherlands Government were heavily strained to meet the cost not merely of the continued mobilization, but of supporting the enormous number of Belgian refugees. In December, 1914, accordingly, a loan of $110,000,000 was authorized. The announcement was made that, if the loan were not promptly subscribed, a forced loan, on much less advantageous terms, would be resorted to. The loan was successfully floated, however, without apparent difficulty, the subscriptions actually amounting to more than $160,000,000. In order to stimulate the fish industry the Government opened a number of fish shops in Amsterdam. Great irritation was manifested by the Dutch newspapers when, on April 14, a German submarine sank the steamer *Katwyk* while at anchor off the North Hinder lightship.

Denmark.—In January, because of the continued rise in the price of wheat, the Danish Government expropriated all the flour in the country, thus effectually preventing further exportation. A new Constitution, which extends the suffrage to women and abolishes the special electoral privileges exercised by the wealthier classes, was promulgated on June 5. Women will not only vote in the election of both houses, but also be eligible for membership. The Landsthing will consist of 72 members, 18 being chosen by the present house and 54 by an indirect but democratic proportional system. The Folkething, in addition to the 114 members now chosen in single member constituencies, will have 26 chosen by proportional representation. By gradual steps the voting age will be reduced from 30 to 25 years.

Albania.—Shortly after the abdication of the Mpret, William of Wied, in September, 1914, Essad Pasha, the exiled War Minister, set himself up as Provisional President, with headquarters at Tirana, and for some weeks maintained his authority over the interior of northern Albania. (*A. Y. B.*, 1914, p. 144.) Disaffection among the Moslem tribes, however,

said to have been incited by Turkish emissaries with a view to using the Albanian population to harass the Serbian and Montenegrin frontiers, developed late in December. Great disorder prevailed. Durazzo was attacked on March 25 and all but captured. The chaotic state of the country occasioned the complete military occupation of Avlona and the landing of forces at Durazzo by Italy. The reoccupation of Epirus by a Greek detachment at about the same time, though declared by the Greek Government to be merely for the purpose of restoring order, was generally regarded as permanent. A great scarcity of food, owing partly to internal disorders and partly to the isolation of the country because of the war, intensified the misery of the situation. During the summer the Serbians established themselves at certain points in the country and in November, retreating before the invading Teutonic and Bulgarian armies, set up a new military base there. Mohammedan bands were reported to be coöperating with the Austrian forces.

ASIA

Japan.—When the Japanese Diet convened on Dec. 15, 1914, the Okuma Cabinet presented a budget which showed an estimated expenditure of $278,000,000 and a decrease of $40,500,000 in revenue. Emphasis was laid upon the necessity of increasing the military and naval establishments. The estimates provided for two additional army divisions and for three dreadnoughts, as well as for smaller vessels. When these proposals were rejected by a large majority, Okuma dissolved the House. He fought the campaign with great spirit and the elections, held on March 25, gave him a majority of unexpected size. The Seiyukai party, which had previously been strong enough to defeat the Government without the assistance of other groups, now mustered only 105 members; two of its leaders, Oaka and Oku, both former speakers of the House, had failed of reëlection. Of the three groups supporting Okuma, the Doshikai alone had a strength of 150. The size of the Government majority depended upon the attitude of the thirty-odd independents; with their support it stood between 70 and 80. The electoral campaign was noteworthy not only for the popular interest manifested, but also for the participation of women in the campaign for the first time in Japanese history. The Diet's failure, because of dissolution, to make appropriations for the year 1916 compelled the Government to follow the budget arrangements for the previous year and to apply in May for supplementary credits. On June 1 the lower house sanctioned, by a vote of 232 to 131, an increase of 34,000 men in the military establishment. The course of negotiations with China (see III, *International Relations*), however, subjected the Government to continual attack; and a fresh embarrassment arose on June 5, when the Minister of the Interior, Viscount Kanetake Oura, was accused of election bribery. His resignation on July 29 was followed next day by that of the Cabinet, but at the request of the Emperor Okuma remained in office with a reconstructed Cabinet, Baron Kikujiro becoming Foreign Minister, Ishiki Minister of the Interior, Kato Minister of Marine, and Takatomi Minister of Finance. While deciding that the despatch of Japanese troops to Europe would be impracticable, Okuma made every effort to increase the manufacture of munitions so as to meet the deficiency which existed in Russia. Yoshihito was crowned Emperor of Japan at Kioto on Nov. 10.

China.—In February the Chinese Government extended to the leaders of the revolutionary propaganda a general amnesty and an invitation to coöperate in the strengthening and development of the existing regime. Late in January the Foreign Minister, Sun Poa-chi, was transferred to the Audit Department and succeeded by Lu Cheng-hsiang. The landing of Japanese troops at Shanghai occasioned serious anti-Japanese riots there; and during the progress of negotiations between Japan and China (see III, *International Relations*) a commercial boycott seriously hampered Japanese merchants. It was reported in August that Yuan Shi-kai contemplated a restoration of the

monarchy since republican institutions were unsuited to the existing circumstances of China. In a message to the Council of State, on Sept. 6, he declared that it was his special duty to protect the Republic, yet "many citizens from the provinces have petitioned the acting parliament to change the form of government. As the Presidency is conferred by the will of the people, its existence also should depend on their will." A month later the Council of State formulated a constitutional amendment for submission to a national convention whose members should be chosen by provincial conventions. In spite of the advice offered by Great Britain, Russia, and Japan on Oct. 29 the local elections were held in due course. According to an official statement the delegates from 18 of the 22 provinces would give solid support to the restoration of the monarchy. The resignation of the Prime Minister, Hsu Shi-chang, who was known to oppose the contemplated change, indicated that the fate of the Republic was practically settled. On Dec. 11 Yuan Shi-kai assumed the title of Emperor, tendered him by the Council of State after a canvass of the vote on the proposed change.

Persia.—Turkish and German agents became active in Persia during the summer. They endeavored to foment a Mohammedan holy war against the Allies and to secure the coöperation of the gendarmerie. Attacks were made upon British officials, the consul-general at Ispahan being wounded, the vice-consul at Shiraz being killed, and two army officers at Bushire also killed. At Kermanshah the German consul, with a force of 200 armed men, compelled the British and Russian consuls to withdraw. For a time the Shah showed a leaning to the German side, various measures being taken by the Government to harass Russian subjects. When, however, towards the end of November, a Russian army advanced on Teheran, the Shah came to a satisfactory understanding with the British and Russian Ministers.

THE EUROPEAN WAR[1]

ALEXANDER MARTIN

The Opposing Forces.—On Jan. 1, 1915, Germany, Austria and Turkey were at war with Great Britain, France, Belgium, Russia, Serbia, Montenegro, and Japan. But, since the fall of Tsingtau in November, 1914, and the capture of Germany's possessions in the Pacific, Japan had ceased to take an active part in the war. Italy and Austria were in the midst of negotiations during which Austria tacitly agreed to forego military operations against Serbia and Montenegro. (See III, *International Relations.*) Italy declared war on Austria on May 23, and on Dec. 1 Baron Sonnino announced that Italy had ratified the convention of Sept. 5, 1914, between Great Britain, France, and Russia, whereby the contracting parties agreed not to make a separate peace. On Oct. 19 Japan became a party to this agreement. On Oct. 11 Bulgaria joined the Germanic allies. (See III, *International Relations.*)

At the beginning of the year, Germany faced three great nations in arms, whose undefeated forces were constantly increasing in numbers. In 1914 she had struck at France and had failed in her main purpose of annihilating the French and British armies and of capturing Paris. She had turned on Russia, captured an army, forced back the Russians everywhere, and in turn had been driven back close to her own frontier. She had turned on France a second time in an effort to reach the English Channel opposite Dover, and had failed in the most sanguinary battle in history. Her ally, Austria, had been thrice beaten by Russia, had lost a province to Russia, and an army in Serbia. Her fleets had taken refuge in her fortified harbors. But she had almost completely overrun Belgium; she was in possession of one-tenth of the territory of France, embracing

[1] The international aspects of the European War are discussed in Department III, *International Relations*, as to the relations between belligerents, and Department I, *American History*, as to the relations of the United States with belligerents. A complete chronology of the war is given in Department XXXIII.

the richest and most important French iron mines; and her armies stood upon the territories of her enemies with the exception of the lines in East Prussia, and Galicia, and for a short distance in Alsace. She had failed to conquer Europe, but Europe had made no progress towards conquering her.

The War on the Sea.—Only four German cruisers were believed to be at large on the high seas on Jan. 1, 1915, the converted cruisers *Prinz Eitel Friedrich* and *Kronprinz Wilhelm*, and the light cruisers *Dresden* and *Karlsruhe*. With the exception of these four vessels, the Allied fleets had cleared the ocean of the battleships, cruisers, and mercantile marine of the Central Powers. The *Eitel Friedrich* arrived at Newport News, Va., on March 11, and disclosed a list of 11 vessels, valued at $5,420,000, which she had destroyed, including the American sailing ship, *William P. Frye*, loaded with wheat consigned to English ports. She was interned on April 8. The *Kronprinz Wilhelm* also sought refuge at Newport News on April 11. She had kept the seas constantly since Aug. 3, 1914, and destroyed during her career 13 vessels, valued at $5,810,000. She was interned on April 29. (See also I, *American History.*)

The *Dresden*, which had escaped from the battle off the Falkland Islands on Dec. 5, 1914 (*A. Y. B.*, 1914, p. 157), evaded capture until March 14, when she was caught near Juan Fernandez Island by the British cruisers *Kent*, *Orama*, and *Glasgow*. After five minutes of fighting, she hauled down her colors and displayed the white flag. She was much damaged and was on fire, and eventually her magazine exploded and she sank. The crew was saved and 15 badly wounded Germans were taken into Valparaiso. There were no British casualties, and no damage to the British ships. The *Dresden* had captured five vessels, valued at $1,370,000. On April 16, it was announced that Chile had protested to the British Government against the attack upon the *Dresden* while she was lying in Cumberland Harbor, Juan Fernandez Island. The British Government tendered a "full and ample apology" to the Chilean Government but observed that while the *Dresden* had accepted internment, she still had her colors flying and guns trained.

Meanwhile the *Karlsruhe* had mysteriously disappeared. On March 17, a Danish paper published an account to the effect that the *Karlsruhe* was sunk at the end of 1914, or the beginning of 1915, near the American coast. One evening an explosion occurred which broke the ship in two. One part immediately sank, but the other remained afloat long enough for a supply ship to rescue from 150 to 200 of the crew. This vessel reached a German port, where the survivors were ordered, under pain of severe punishment, to say nothing about the disaster. The absence of any other information lends credence to this story. The *Karlsruhe* had captured 17 vessels valued at $8,300,000.

The fate of one other German vessel is of interest. The cruiser *Königsberg*, which had been blockaded in the Rufigi River in German East Africa since November, 1914, was attacked by two British shallow-draft river monitors, the *Severn* and the *Mersey*, which ascended the river and opened fire on the morning of July 4. The cruiser made a spirited resistance but after a six hours' engagement her guns were silenced, and on July 11 the monitors completed the wreck of the cruiser. She was the last of the German raiders to succumb.

Naval Battle in the North Sea.—In 1914 the German fleet bombarded Yarmouth on Nov. 3, and Scarborough, Whitby and Hartlepool on Dec. 16. On Jan. 24 the Germans made a third and last attempt against the east coast of Britain, presumably against the Tyne or the Firth of Forth. Their force, so far as is known, consisted of the battle cruisers *Derfflinger* (28,000 tons, 8 12-in., 27 knots), *Seidlitz* (24,640 tons, 10 11-in., 26.2 knots), and *Moltke* (22,640 tons, 10 11-in., 28.4 knots), the armored cruiser *Blücher* (15,550 tons, 12 8-in., 25.3 knots), and a number of light cruisers and destroyers. This squadron unexpectedly encountered a British battle-cruiser squadron of superior speed and armament in the early morning of the 24th, about 30 miles from the English coast. The British

squadron, commanded by Vice-Adm. Sir David Beatty, included the *Lion* (26,350 tons, 8 13.5-in., 28.5 knots), *Tiger* (28,000 tons, 8 13.5-in., 28 knots), *Princess Royal* (26,350 tons, 8 13.5-in., 28.5 knots), *New Zealand* (18,800 tons, 8 12-in., 25 knots), and *Indomitable* (17,250 tons, 8 12-in.), the light cruisers *Arethusa, Aurora, Birmingham, Lowestoft, Nottingham, Southampton,* and *Undaunted,* and destroyer flotillas. When first seen German ships were steering northwest, but they quickly changed the course to southeast. They were formed in single line-ahead, with their light cruisers in advance, and with destroyers on their starboard beam. At 7.30 a. m. the British main body sighted the Germans at about 14 miles (24,600 yds.). The British gradually increased their speed to 28.5 knots and closed to 20,000 yds. from the *Blücher,* the fourth and rearmost German ship. Beginning at 8.52 the *Lion,* at intervals, fired single shots which fell short. At 9.09 she hit the *Blücher.* At 9.20 the *Tiger* opened on the *Blücher* and the *Lion* changed target to the third German ship, which was hit by several salvos at 18,000 yds. The *Princess Royal* in turn came within range, and opened fire on the *Blücher,* which fell to the rear and came under the fire of the *New Zealand.* At 9.45 the *Lion* was reaching the leading German ship, which was on fire. The *Blücher,* which was also on fire, heavily listed, and in much distress, soon turned out of the line and steered northward, followed by the *Indomitable.* At 11 o'clock, a German shot damaged one of the *Lion's* feed tanks, causing the port engine to be stopped. Some of the *Lion's* forward compartments were flooded, and at 12.20 Admiral Beatty transferred his flag to the *Princess Royal.* Meanwhile the *Blücher* had sunk. The Germans had now reached an area where danger from German submarines and mines prevented further pursuit. The three German cruisers continued their course eastward in apparent distress. The *Lion* and *Tiger,* having drawn ahead of the remainder of the squadron, were in action for some time, and consequently were subjected to the Germans' concentrated fire, more particularly the *Lion.* No other large ship was hit. The *Tiger* lost 10 killed and 11 wounded; the *Lion,* 21 wounded. The destroyer *Meteor* lost four killed and one wounded, and was herself disabled and was taken in tow. Two hundred and fifty of the *Blücher's* crew were rescued from the water by the English. The *Lion* was towed to harbor at five knots, surrounded by destroyers, who drove away German destroyers that attempted to fire on the disabled vessel. She arrived at her home port on the morning of the 26th.

German Submarine Campaign.—The superior strength of the British Navy at the outbreak of war compelled the German Navy to avoid a decisive battle. The German Admiralty expected to be able to overcome the British naval preponderance through the action of submarines. German submarines sank one superdreadnought and three armored cruisers in 1914, and an old battleship, the *Formidable,* on Jan. 1, 1915; but as the war went on, it became evident that in spite of its losses the British fleet was becoming relatively stronger than the German fleet. After the disastrous battle in the North Sea on Jan. 24, the German Admiralty determined upon a change of policy in regard to the use of submarines. On Feb. 4, Germany declared the waters around Great Britain and Ireland a war zone after Feb. 18, and announced that she would destroy every enemy ship found within the zone, at the same time warning neutral ships of hazards and dangers. For some seven months the German Admiralty pursued in the war zone a policy of terrorism by the frightfulness of the submarine operations, the moral, material and international results of which are reviewed elsewhere in this volume (see I, *American History*). By the time the *Arabic* was sunk in August, the authors of the German submarine policy had begun to perceive that they were committing a tremendous blunder. They had failed utterly in cutting off the British Isles from commerce with the rest of the world; the British mercantile marine was larger than at the beginning of the war; and 2,300 small British vessels were sinking German submarines faster

than the Germans could build them. On Sept. 8, German reports stated that the *U-27* was lost. She was the seventh German submarine positively known to have been destroyed, but many others had been lost of which no mention was made either by the Germans or the British. After the sinking of the *Arabic*, Germany acceded to the demands of the United States to provide for the safety of passengers on passenger vessels and a German submarine flotilla was sent to the Mediterranean, where it was engaged during the remainder of the year in a vain attempt to prevent the Allies from sending troops to Saloniki.

In 1914 the German Navy had almost undisputed control of the Baltic. As the summer of 1915 wore away it became evident that British submarines and the Russian fleet were gaining the upper hand in those waters. Several German war vessels were destroyed during the summer and autumn (see XXXIII, *Chronology of the European War*). Between the 1st and 21st of October, it was reported that 26 German steamers, varying in tonnage from 1,000 to 8,000, were torpedoed in the Baltic by British submarines. During the same period 26 German trawlers were captured, five German transports were sunk, and one was run aground. In the Black Sea the Russian Navy maintained control throughout the year.

The Naval Situation.—At the end of the year the action of the Germanic naval forces was reduced to the sporadic and constantly diminishing efforts of a small number of submarines, which have sent to the bottom far more unoffending civilians than armed enemies. The Allied navies have protected their own commerce and have driven their enemies' commerce completely from the sea; they have made their enemies' fleet harmless and have assisted the operations of their own armies by direct coöperation; they have made it possible to transfer their own troops in unprecedented numbers across the sea and have prevented the enemy from using the sea for the transfer of troops. No German merchant ship, battleship, or cruiser has been at large on the high seas for many months; the German High-Sea Fleet does not venture beyond the protection of its mine field and coast guns; and the greatest military power of all time has seen her colonies wrested from her one by one. History teaches that the command of the sea is a prerequisite to the conquest of Europe and that the free and independent states need not despair of ultimate victory so long as one of them, or all in combination, retain control of the sea.

The Western Front.—Turning now to the military operations, it will be recalled that on the western front the German offensive in 1914 was broken at the Marne and at Ypres. The new year was to be marked by great efforts on the part of the Allies to break the German defensive. Two and a half million Frenchmen, a half million British, and a smaller number of Belgians faced the Germans on the western front. In addition, 1,250,000 Frenchmen and a greater number of British were in training to replace losses. A French Government estimate, of Feb. 27, placed the number of Germans on the western front at 1,880,000, and of Germans and Austrians on the eastern front at 2,080,000.

At the beginning of the year the Allied trenches extended from the mouth of the Yser to the slopes of the Jura Mountains, a distance, as the trenches ran, of some 590 miles. Of this the Belgians held 15 miles, the British, 31, and the French, 544. Certain sections along the crests of the Vosges could be held by occupying strong tactical points. Again, there were certain reaches where the lines on both sides were rendered almost impregnable by nature and by art. The actual length of the trenches was about 450 miles. The parts which required special watching were the section from the sea to Albert, the neighborhood of Soissons and Rheims, northern Champagne, the Argonne, the Verdun and Nancy districts, and the south end of the Vosges. The part held by the British lines included the front which the Germans had selected in October for breaking through to Calais. The Allied lines were divided into two wings at Compiegne, which is at the junc-

tion of the Aisne and the Oise. General Dubail commanded the right wing, from Compiegne to the Swiss frontier, and General Foch, the left wing, from Compiegne to the sea. The Germans occupied extremely strong lines, well adapted for taking the offensive.

The winter of 1914-15 was marked by intermittent bombardments, attacks, and counter-attacks on the western front. There was little change in the length and positions held by the contending armies. The Allies made three distinct efforts to break the German lines in January, in Alsace, in Champagne, and north of Arras, but made gains of only minor importance in each case. On the night of Jan. 11-12 the Aisne River rose and carried away most of the bridges behind the French lines in the vicinity of Soissons. The Germans massed troops against the isolated forces north of the Aisne, drove them back to the river, and compelled them to recross on a front of 10 miles. This was the most important gain made by either side along the line in France and Belgium since the close of the Battle of the Marne. February also was comparatively uneventful and it was not until early in March when the Allies began a tentative offensive against the German lines by a vigorous attack at Neuve Chapelle, that the operations on the western front assumed great importance.

The Battle of Neuve Chapelle.—Neuve Chapelle is a small village 11 miles west of Lille in "a flat, marshy, dyke-chequered country." East of the village the surface rises gently for a little over a mile to elevated ground known as the Aubers Ridge. The Germans held Neuve Chapelle, while the British lines ran north and south immediately west of the village. At this time it was the custom of the Germans to hold their front trenches with a small number of men and to keep large reserves in the rear. The British plan for the attack at Neuve Chapelle was based upon this information. It was their design to destroy the front line by raining projectiles upon it, and then, at a designated time, to charge the front line as their artillery increased its range so as to prevent the arrival of German reinforcements.

At 7.30 o'clock on the morning of March 10, 350 guns began to bombard the German lines, at short range, on a front of a little over 4,000 yds. This fire beat down the German parapets, compelled the defenders to seek cover, filled the trenches, and destroyed the wire entanglements. At 7.35, the artillery ranges were increased and the infantry of the Fourth and Indian Corps advanced to the attack, the Indians on the right of the line. The British 18-pounder shrapnel bullets had swept away most of the wire entanglements and the first line of trenches was taken with small loss. On the extreme left, however, the entanglement was almost intact and here the British losses were very heavy; of one battalion of 750, only one officer and 150 men answered the roll call at the end of the day. By 11 a. m. the village and the roads leading north and south were held by the British, but here their success ended. The attacking troops were disorganized, and expected reinforcements did not arrive. Four and a half hours elapsed before the British were ready to move forward. Their artillery was unable to maintain a curtain of fire in advance of the infantry for so long a time for want of ammunition. The Germans organized their third line of defense, and when the British attempted to advance they were decisively checked. The Germans made a counter-attack at dawn on the 11th and failed with heavy loss. The Fourth and Indian Corps attempted, in turn, to advance, and were unable to do so. During the following night, Bavarian and Saxon reinforcements arrived and the British were reduced to the defensive. Before dawn on the 12th, the Germans attacked in great masses and were repulsed, but they continued to attack during the day. In the evening, Sir John French issued orders for the British to consolidate their new positions and to suspend further offensive operations. The British had gained 1,200 yds. on a front of 4,000 yds. They had lost 2,547 killed, 8,453 wounded, and 1,746 missing, a total of 12,746. On the other hand, they had captured 1,687

prisoners, and they estimated the German losses at 17,000 or 18,000, chiefly incurred in counter-attacks. Neuve Chapelle was a victory that "halted half-way" for want of prompt reinforcement to push through the gap in the enemy's line.

An immediate sequel of the struggle at Neuve Chapelle was a short and furious battle at St. Eloi, three or four miles south of Ypres. Here the Germans began a tremendous bombardment against the British lines at 5 p. m. on March 14. A few minutes later they sprang a mine in a large tumulus or hill within the British lines, and stormed and took the British entrenchments. The British made a counter-attack at 2 a. m. on the 15th and recaptured nearly all of the lost ground, but the Germans remained in possession of the mound.

The Second Battle of Ypres.—A period of comparative inactivity followed the attacks on Neuve Chapelle and St. Eloi. On April 17 the British sprang a mine under Hill 60, a small eminence about three miles southeast of Ypres, and followed it up by a successful assault. A struggle of five days ensued for possession of the hill which remained in the hands of the British on the evening of April 21. At 5.30 p. m. on the 22d, the Germans attacked the French trenches north of Ypres with poisonous gases on a front of more than one mile. For some time they had been employing shells filled with asphyxiating gases in violation of the Hague Convention of 1899, to which Germany was a party; and, apparently in anticipation of using asphyxiating gases stored in cylinders, they had been accusing the Allies of the practice. As early as April 6, German prisoners had reported that the Germans were preparing to asphyxiate their enemies by means of poisonous gases. The gas was stored in steel cylinders under pressure, and, being of a heavy nature, spread along the ground under favorable wind conditions without being dissipated too quickly.

The surprise of the French colonial troops who held the lines north of Ypres was complete; a division was nearly destroyed, and 50 guns were captured. The Germans poured into the gap in the French line and began to cross the Yperlee Canal north of Ypres, which seemed to be within their grasp. At the same time they attempted to gas the 3d Canadian Brigade on the right of the French colonials, but here the direction of the wind was not favorable. The Canadians were saved from the full effects of the poisonous gases, and they held their lines. The onward rush of the Germans was stopped by the charge of four battalions of Canadian troops. A struggle which lasted nearly a month now began for the possession of Ypres. At 4 a. m. on April 23, the Germans attempted to asphyxiate the 2d Canadian Brigade, which held 2,500 yds. of front-line trench northeast of Ypres, but the Canadians did not flinch and held their ground. They again attempted to poison the Canadians on the 24th and the Lahore Division of the Indian army on the 26th. Within two weeks the Allies were supplied with effective respirators as a protection against poisonous gases, and the advantage of the Germans ceased. The struggle for Ypres was over about the 17th of May. The Germans had compelled the Allies to shorten their lines along the Ypres front, but they had failed to take the city and had been driven back to the eastward of the Yperlee Canal.

The St. Mihiel Salient.—April saw also the beginning of a long struggle, in which the French were the aggressors, for the "wedge" at St. Mihiel, east of the French fortress of Verdun. This salient, formed in September, 1914, and projecting into the French defensive lines between Pont-à-Mouson and Fresne, was about 18 miles wide at the base and 15 miles in depth, with its apex at St. Mihiel. Early in April the French attacked the southern face of the wedge from Pont-à-Mouson to St. Mihiel and gradually drove back the German lines. The main attack was made at Les Eparges, on the west face, north of St. Mihiel, a ridge which commanded much of the ground in fear of the German salient. The Germans were gradually forced back upon both faces of the wedge, but the French failed to gain any decided advantage, and the Germans continued to hold St. Mihiel.

The Offensive at Souchez.—To relieve the pressure upon the British at Ypres and upon the Russians in western Galicia, General Foch, with an army of 250,000 Frenchmen, began a great offensive on May 10 on a front of 20 miles between Armentières and Arras, on the edge of the chief mining district of northern France. By the expenditure of 300,000 shells, he flattened the German trenches and the French center advanced three miles with little difficulty. Within the first week he took Ablain, Carency, Neuville St. Vaast, most of Souchez, and the plateau of Lorette. The Germans were well prepared for resistance behind their first lines of defense and the French made little further progress. The French took a part of the famous "Labyrinth" intrenchments and they continued their offensive in this region for about three months. At the same time, the British made a new drive farther north, in the vicinity of La Bassée, but failed with great losses for want of artillery ammunition.

The western front was comparatively quiet in June and July. The Germans made fruitless counter attacks to recover their lost ground in the vicinity of Souchez. On July 30, they retook, by the use of "flame projectors," some trenches which they had lost to the British at Hooge, but on Aug. 9 the British recovered these trenches on a front of 1,200 yds.

The September Offensive.—After a 25 days' bombardment, the British and French began on Sept. 25 a great advance in France. The British attacked to the south of La Bassée Canal and penetrated the German lines to a distance of 4,000 yds., capturing the western outskirts of Hulluch, Loos, and Hill 70, while they gained 600 yds. of trench at Hooge. The French gained the cemetery at Souchez, and the remainder of the "Labyrinth," and in Champagne they broke the German lines to a depth of 2½ miles on a front of 15½ miles. The British captured 3,000 prisoners and 25 guns; the French 25,000 prisoners (including 350 officers), and 150 guns. The advance of the Allies continued during several days, but they did not succeed in penetrating the third line of the German defenses. The Germans brought heavy reinforcements from the interior of Germany and from the Russian front, and during the months of October and November made desperate, but fruitless, efforts to recover their lost ground. The Allies had won a notable success but they had failed in their main purpose, which was to penetrate the German lines, pour large armies through the gaps, and drive the invaders out of France. During the remainder of the year the operations on the western front were of a purely local character.

The Eastern Front.—On the eastern front, extending over a distance of 700 miles from the Baltic to the frontier of Rumania, not less than 6,000,000 men were engaged during the last five months of 1914 in gigantic movements such as the world had never seen. At the beginning of 1915 the Russians had the advantage of position. In Courland and Poland they were holding the Germans at a safe distance in front of the Russian fortresses; they had occupied the greater part of Austrian Galicia and were besieging an Austrian army in the fortress of Przemysl; and they had driven the Austro-German armies from all the western Carpathian passes. No hostile force had come within cannon shot of a Russian fortress.

Russian Poland formed a vast salient into the territories of the Central Powers. Warsaw was the immediate objective of the German efforts. The events in October had shown that an advanced position in front of Warsaw was necessary to enable the Russians to support their advanced position in western Galicia, which, in turn, was necessary to protect an offensive movement through the Carpathian passes and the army besieging Przemysl. The Russian lines in western Poland ran from the mouth of the Bzura along the Bzura and the Rawka, the upper Pilica, the Nida, the Dunajec and the Biala, to the Carpathians. A few roads and three railways connected Warsaw with Prussia, but lateral communications were almost wholly lacking in the debatable land between the opposing defensive lines. A fourth railway ran from Ivangorod to the German fron-

tier; a fifth ran westward through Galicia, parallel to the Carpathians, to Cracow; and a sixth ran northwest from the Russian fortress of Novo Georgievsk to East Prussia.

On the eastern front it was not possible to establish continuous entrenched lines, as on the western front, on account of the scarcity of railways. Trench warfare can be carried on only in the vicinity of railways where food, ammunition, and men can be supplied in a continuous stream. In the south, opposite Tarnow, and in the north, along the Bzura and Rawka front west of Warsaw, trench warfare was fully established in January; but in the intervening space, and in the region north of Warsaw the absence of east and west railways compelled both sides to operate with small forces. On the Bzura-Rawka line siege warfare was carried on throughout the month of January, similar to operations in France and Belgium. When these two small streams became solid ice, the Russians retired from their banks and the Germans established themselves on the east banks. About Jan. 30 the Germans began a persistent thrust at the Russian lines, deploying, on a seven-mile front, seven divisions and 100 batteries, which, in one hour, threw 24,000 shells into the Russian trenches. This attack continued, with alternate gains and losses of ground, until Feb. 7, when the Russians began a well-organized counter-attack. The German attack had spent itself and both sides settled down again to trench warfare. Allied estimates placed the German forces at 140.000 men and their casualties at 40,000.

German Attack on the Russian Right.—In the East Prussian zone, Germany and Russia each possessed a natural frontier or barrier upon its own territory, strongly fortified. The German line of defense, close to the political boundary, ran from Tilsit through forests and marshes to Insterburg, thence along the Angerapp River and Mazurian Lakes to Johannisburg, thence through marshes, lakes, and forests to Thorn on the Vistula, about 200 miles from Tilsit. These natural obstacles were improved by fortification. The country in rear of the line is poor and thinly populated, but it is traversed by 16 military railways, which are connected by numerous latitudinal lines. The Russian disaster at Tannenberg in August, 1914, demonstrated the great strength of Germany's line of defense in the Mazurian Lakes region in East Prussia. The Russian line of defense, well within Russian territory, ran from the Niemen near Kovno along reaches of the Niemen, Bobr, Narew and Bug rivers to the fortress of Novo Georgievsk on the Vistula. The banks of these rivers are generally marshy and favorable for defense. The communications behind the Russian defensive lines were good, but they were far inferior to those behind the German lines. Along the Narew, Bobr and Niemen rivers, from the junction of the Narew with the Bug, north of Warsaw, are the fortresses of Sierok, Pultusk, Rozan, Ostrolenka, Lomza, Ossowetz, Kovno, and Grodno. These fortresses protect the main railway line from Petrograd to Warsaw.

At the beginning of the year, the Russians, after being once driven back into their own territory, had returned to East Prussia and stood before the Angerapp River and the Mazurian Lakes. As the cold weather came on, late in January, they began to advance into the Lake region and also along the Warsaw-Mlawa railway toward the Prussian frontier. A small force advanced toward Thorn, in the region north of the Vistula, and on Jan. 20 occupied Sierpiec, on the River Skrwa, only 45 miles from Thorn. Within a few days this force crossed the river and threatened the German position at Lipno.

Early in February the Germans began to offer strong resistance to the Russian advance southeast of Tilsit and along the southern boundary of East Prussia, as a screen to a great concentration behind the Mazurian Lakes for a blow against the Russian right, which was to be delivered on Feb. 9. Here they collected eight or nine corps against the four corps of the 10th Russian Army. The Russians learned of the German concentration on Feb. 4, and began to prepare for a retreat. Warned by these preparations the Germans began their advance on the 7th. From Johannisburg they struck eastward,

but the 26th Russian and 3d Siberian Corps made good their retreat behind the Bobr with losses by no means in excess of the German losses. Farther north the Germans were more successful, driving in between the 3d Russian Corps, which retreated in a northeasterly direction on Kovno, and the 20th Corps, which retired to the southeast towards Suvalki through forests and marshes. The 20th Corps was given up as lost.

Meanwhile the Russians were concentrating forces behind the Niemen and the Bobr. Three-fourths of the 10th army remained intact, and was rallied behind the Niemen. On Feb. 21 the Russians began a counter-offensive from Plonsk, a little northwest of Novo Georgievsk, to Grodno, on a front of 100 miles, in order to relieve the pressure on their 10th Army, and within a week they had advanced their lines from three to 11 miles. On the 23d the advancing forces met a division of the 20th Corps which had retreated 60 miles in 12 days through deep snows in a trackless forest, fighting all the while. Within a few days thereafter many small detachments of the 20th Corps joined. Farther north one German detachment reached the Niemen about 10 miles north of Grodno and crossed the river on the 24th, but it was driven back to the left bank on the 25th. Early in March the Germans retired from in front of the Russian lines in the vicinity of Kovno, and the Russians pushed the Germans back throughout the month of March. On the 9th they reached Augustowo; on the 19th they took Lodzie, and towards the end of the month, Sejny.

Austro-German Offensive in the Carpathians. — Coincident with the drive to the Niemen, the Teutons launched an attack on the Carpathian front. Nine roads and three railways from Galicia cross the Carpathians into northern Hungary, on a front of a little over 100 miles, through nine important passes, Tarnow, Tilicz, Dukla, Lupkow, Rostroki, Uszok, Vereczke, Beskid, and Wyszkow. Fifty miles farther east is the Jablonica Pass, through which a railway crosses. Near the Rumania frontier the Kirlibaba and Strol, Rodna, and Borgo passes connect eastern Hungary with Bukowina. Railways cross over the Carpathians, through the Lupkow, Uszok, and Beskid passes. Uszok Pass is south of Przemysl, and Wyszkow south of Lemberg.

At the beginning of the year the Russians were driving the Austrians out of Bukowina, and on Jan. 16 they occupied Kirlibaba Pass. About Jan. 23, the Austro-German armies began an attack on the Carpathian passes on a front of 200 miles, from the Dukla on the west to the Kirlibaba on the east. The main attack was in the east, for success here would have enabled the assailants to cut the railway over which the Russian armies in Galicia drew most of their supplies. One Austro-German group advanced into Uszok Pass; a second, through Vereczke and Beskid passes; a third, through Wyszkow; a fourth (purely Austrian) through Jablonica; and a fifth across Kirlibaba and Dorna Vatra into Bukowina. The first three groups were stopped near the northern exits from the passes. The Russians retired before the first and second groups to points about 10 miles from the passes and took up positions which they held against all assaults.

The Austro-Germans continued their attacks for five weeks until Przemysl fell. On Feb. 28 the two armies began a series of determined assaults in order to force their way into Przemysl in combination with a great effort from the west, between Gorlice and Ciezkowice, but in vain. The third group was definitely stopped in Wyszkow Pass. The movements of the fourth and fifth groups are not very well known. They won considerable success at first, capturing Stanislau on Feb. 21 and advancing westward along the railway to Kalusz; but they were eventually driven back, after suffering enormous losses, to Kalomea and Nadorna, near Jablonica Pass. The Austro-Germans were beaten in a great battle south of Halicz on March 1, and on the 4th the Russians entered Stanislau.

The Fall of Przemysl.—Przemysl surrendered on Monday, March 22, with 2,600 officers (including nine generals), 117,000 men, and 2,500 guns, of which 700 were of large

calibre. After a four months' siege, a garrison of 120,000 men remained, twice the number that would have been sufficient to have held the fortress. The city had been besieged between Sept. 16 and Oct. 14, when the Russians were compelled to retire before von Hindenberg's first great offensive. General Selivanoff reëstablished the Russian lines about the fortress on Nov. 12. In their hurried retreat many Austrian troops took refuge in the fortress and swelled the garrisons out of all proportion. The Russian siege artillery was inadequate to reduce the fortress after the manner of the Germans; and the Russians, taught by the siege of Port Arthur, wisely refrained from useless assaults upon the works. They knew that the garrison was excessively large and that hunger would compel it to surrender. During the siege the Austrians made frequent efforts to break through the Russian lines. Six sorties were made between Dec. 11 and Dec. 22, one of which advanced 15 miles from the forts before it was arrested. Succor was near in December, but in January and February there was little hope of relief and the sorties were few. Early in March a desperate effort to relieve the city by an offensive through the nearest passes of the Carpathians failed. During the last days of the siege 200 men died daily as the result of privation and strain. On Thursday, March 18, General von Kusmanek, who commanded the fortress, made a last appeal to his men to pierce with their "points of steel the iron circles of the enemy." A final sortie was made the same day but the number of troops taking part was small and it was made only for the purpose of capturing Russian supplies. On Sunday night the Austrians blew up their main forts and at nine o'clock on Monday morning they surrendered the city. This event released a Russian army of over 100,000 men for service in the Carpathians and gave the victors free use of the railways which passed through the fallen city.

Battle of the Carpathians.—The period of six weeks which elapsed between the fall of Przemysl and the beginning of the great Austro-German offensive in western Galicia, in the first days of May, was signalized by a great struggle for the mastery of the watershed of the Carpathian Mountains. It was necessary for the Russians to secure the Carpathian passes in order to gain access into Hungary and to protect their flank for operations westward towards Silesia. Furthermore, the Russians would have to give up an advanced position in the Dukla Pass or support it by gaining the adjacent passes. In the matter of railway communications, the Russians, for once in their experience, had a decided advantage. The so-called Transversal Railway runs through Galicia, parallel to the Carpathians, at a distance of about 20 miles from the main crest, while the nearest lateral railway on the Hungarian side is about 50 miles south of the crest.

As Przemysl was verging to its fall, the Germanic allies in their efforts to relieve it drove the Russians from all the Carpathian passes except the Dukla, and nearly continuous battle fronts were developed on the north side of the mountains. The release of the siege army from Przemysl and the advantages derived from the use of the railways passing through the city enabled the Russians to take the offensive in the Carpathians with renewed vigor. Cavalry and artillery, however, had been largely employed by the Russians in blockading Przemysl, and these arms are of limited use in mountain warfare. On the other hand, the Germans and Austrians could derive little advantage from their superior heavy artillery.

The Russians planned to deliver their grand attack between the Lupkow Pass on the west and the Uszok on the east. In this difficult region great forces had been concentrated for the relief of Przemysl. German reinforcements had poured continuously into Hungary, for the land of the Magyars, the dominant race in Hungary, like the estates of the Prussian nobles, had to be defended at all costs. To facilitate their main attack, the Russians launched a secondary attack on the right, between the Lupkow and Bartfeld passes. The secondary attack had accomplished its purpose by April 12, and active operations ceased until the Austro-German success in

western Galicia in May compelled the Russians to make a hasty retreat. The main attack was making headway in the direction of Belgrade by March 23, and by April 12, 70,000 prisoners, 30 guns, and 200 machine guns had been taken. The fighting practically came to an end about April 16, when warm weather came on, the streams began to rise, and the roads became impassable.

German Raid in Courland.—On April 27 the Germans started from Tilsit and Jurburg on a raid into the rich Baltic province of Courland, with a force of cavalry estimated at one and a half corps, accompanied by a small body of infantry. The district between the Libau-Shavle railway and the Prussian frontier was practically unguarded. The main body followed an excellent road which leads from Tilsit by Taurogen, Shavle and Mitau to Riga, while smaller bodies of cavalry advanced by parallel roads on either side. The advance was rapid, and on the 29th of April, the Germans drove the Russians from Shavle. German patrols appeared before Libau, on the Baltic, on May 1. On May 5, the Germans were repulsed at Mitau, about 25 miles from Riga, and on the 7th, they began a rapid retreat, leaving behind much booty. On May 14 the Russian railway service was renewed to Muravievo, a town midway between Mitau and Memel. On May 8, Libau was permanently occupied by a German column that had moved along the seacoast accompanied by a flotilla of cruisers and destroyers. The Germans seized large quantities of wheat and stripped the country of metal, cattle, potatoes, grain, and poultry. Meanwhile, a Bavarian cavalry division and a regiment of Prussian guards had moved through southern Courland to Sejny. On May 8 this force was routed near Sejny by Russian cavalry.

The Campaign in Galicia. — The great Germanic offensive against Russia in the spring and summer of 1915 began with an attack against the Russian lines in western Galicia. At the opening of the campaign these lines followed the Dunajec, Biala, and Ropa rivers to the Carpathians, passing through or near the towns of Tuchow, Gromik, Ciezkovice and Gorlice. Behind the Austro-German lines the railway facilities were good for the concentration of men, guns and ammunition at Gorlice, and a successful irruption through the Russian lines at this point might lead to an advance against the communications of the Russian armies in the Carpathians, and open the way for a march along the Transversal Railway against Przemysl and Lemberg. The 11th Prussian Army of six corps, under the command of Field Marshal von Mackensen, formed the phalanx to open the way through the Russian lines, and it won the initial success by breaking through in front of Gorlice after a desperate battle on May 2.

Preparatory to this offensive, the Austro-Germans, late in April, concentrated at least 24 corps against 14 Russian corps on the Galician front. In the decisive theatre 12 Germanic corps faced five Russian corps of the army of General Dimitrieff. Four thousand guns, half of them of heavy calibre, were assembled around Gorlice to breach the Russian lines, and in four hours on the morning of May 2 they threw 700,000 shells, or an equivalent of 140 lb. of shell against each of the Russian defenders. By evening of May 2 the Austro-Germans had secured a foothold along a wide front on the eastern bank of the Dunajec. Mackensen then executed a "left incline" with a part of his force which advanced by echelon to the northeast, in order to outflank the Russian lines to the northward of the gap and to make room for the deployment of other forces which passed through the gap and hastened eastward to shut up the Russian armies in the Carpathian passes. To the north of the gap the Tarnow-Tuchow line held firm on the 3d but on the following day it gave way. The retreat spread rapidly and by the evening of the 4th the Russians were retiring on the entire west Galician front. The Germans reported the capture of 30,000 prisoners. Lack of artillery was largely responsible for the great disaster that had befallen the Russians. They felt the necessity for preserving their guns and by sacrificing their men freely to save them, few were lost. The brunt of the attack fell upon the Austro-Hungarians,

and their losses in dead and wounded were enormous.

On May 5 the Austro-Germans between Bartfeld and the Uszok began to press the Russian lines in the Carpathians. On the night of the 5th Mackensen's advance troops reached Dukla and Tylava. Most of the Russians had withdrawn, but on the 7th a Russian division which found itself surrounded in the Dukla Pass succeeded in breaking through the Austro-German lines. The Russians began to retreat from the Lupkow Pass on the 6th.

Having given up the Dunajec line, there was no defensible position for the Russians until they reached the San River. They were not routed in any sense of the term, and the bonds of discipline were never dissolved. The average rate of the retreat was six miles a day, which speaks for the orderliness of the withdrawal. On May 8, 9 and 10, the Russians fought a spirited rearguard action on the Vislok, known as the Battle of Mid-Galicia, to cover the retreat of their outlying detachments and to facilitate the destruction of railways, bridges and other material. Their position was neither strong by nature nor improved by art. They succeeded in stemming the torrent temporarily and then continued their retreat. The Austro-German losses have been estimated at 120,000 for the period from May 2-12. The Germanic Allies reported the capture of 69 guns, 255 machine guns, and 103,500 prisoners. Included in the prisoners were many of the wounded in the recent Galician battles and the inmates of the hospitals in Galicia whom the Russians had been unable to remove.

Battle for the Possession of Przemysl.—On the 14th the Russians stood on the line of the San, with their left resting upon the "impregnable" Dniester near Sambor. On the same day the Austro-German armies reached the line of the San and the third battle for the possession of Przemysl began. This struggle lasted until the 3d of June. Whilst the Austro-Germans were awaiting the arrival of their big guns in front of Przemysl, the army of von Mackensen began a drive across the San to the north of the city, and four Austrian and one German corps began a similar drive to the south. On the 14th Mackensen occupied Jaroslav, 16 miles north of Przemysl. By the 16th the left bank of the San was occupied by Austro-German troops as far as Rudnik, 40 miles north of Jaroslav. These two drives made slow but continuous progress, which was delayed, but not arrested, between May 21 and May 27, by counter offensive operations on the part of the Russians, in which many thousand Austro-Germans were captured. At the end of the month the Russians held a zone only 10 miles wide to the eastward of Przemysl and the evacuation of the city, which had been surrounded on three sides on May 17, could not be much longer delayed. The Austrian 30.5 cm. (12-in.) howitzers arrived on the 25th and soon destroyed the forts left intact after the siege. For several days the Russians had been evacuating the city. On the night of June 2-3 the last Russian forces withdrew to the eastward and on the morning of the 3d a battalion of Prussian guards entered the town.

Battle for the Possession of Lemberg.—With the capture of Przemysl began a new battle for the possession of Lemberg, the great railway center of Central Galicia, which lies about 70 miles east of Przemysl. This battle lasted until June 22, and the city was captured by the Austrians. The Russian defense was made about 15 miles west of Lemberg, on the Grodek line, a series of lakes and marshes along the Vereszyca River, a small affluent of the Dniester from the north. The Russian left rested on the Dniester. Between June 5 and June 16 the Austro-Germans, issuing from the Carpathian passes, made desperate efforts to break through the line of the Dniester; but they failed with the loss of 17 guns, 78 machine guns, and 15,000 prisoners. The slow Germanic advance from Przemysl to the eastward did not reach the town of Grodek until June 16. Between the 12th and the 16th von Mackensen, now in command of all the Galician armies, reported the capture of 40,000 men and 69 machine guns. On June 18-19 the battle raged on a 40-mile front on the Grodek lines between Rava Ruska and Komarno. Macken-

sen broke through the defensive lines north of Grodek and smashed in the defenses in front of Lemberg on the 20th and 21st. The Russians had completed their evacuation, and Mackensen's troops entered on the afternoon of the 22d, 293 days after Lemberg had fallen into the hands of the Russians.

The Fall of Warsaw.—On June 25 the Austrians resumed the offensive to the east of Lemberg against the Russians, who retired to the Gnila Lipa on the 26th. After a four days' battle the Russians retreated to the Zlota Lipa, a small stream which flows into the Dniester at the town of Nizniow. Here they took up a strong position on July 4, along a marshy valley in a forest region, where they stayed the advance of the Germanic allies until Aug. 27. Mackensen began a drive on June 28 on a wide front to the northward, between the Vistula and the Bug, against the communications of the armies based on Warsaw and Ivangorod. His immediate objective was the Cholm-Lublin-Ivangorod railway. At first his advance was very rapid. His armies crossed the difficult Tanew River region in one day. They occupied Tomaszow on the 28th, Zaklikow and Frampol on the 29th, Tarlow on the 30th, and Krasnik on July 1. They had now reached the Jozefow-Krasnik-Plonka line, where the Russians had determined to stop their advance. The great battle of Krasnik from July 2 to 9 resulted in a victory for the Russians, who captured more than 20,000 prisoners. Here the Austro-Germans settled down on the line of the Urzendowka. The Germanic advance from the south was definitely stopped for the time being.

Between July 12-14 the Germanic allies began an offensive campaign on the entire eastern front, compared with which the campaign of the Archduke Frederick and von Mackensen between May 2 and July 9 might almost be called a minor operation. At least 46 army corps attacked the Russians on a front of 1,000 miles extending from the Baltic to the Rumania frontier. Six of these corps operated in the Baltic provinces, four against the line of the Niemen, nine against the Bobr-Narew-Bug line, three between the Vistula and the Pilica, and 24 under Mackensen between the Pilica and the Rumania frontier.

In the Baltic provinces the opposing lines ran from Libau to Kovno, a distance of 150 miles. The purpose of the German offensive was to surround and capture the 5th Russian Army. The German left advanced rapidly from the direction of Libau on Mitau, where it arrived on July 18. It failed to take the town by a *coup de main*, but captured it on Aug. 1. The German right advanced from the vicinity of Rossinie on July 20 against the Russian left. The Russian line between Mitau and Shavle fell back slowly before the German advance.

When Mackensen's attack from the south against the Russian communications came to a standstill, von Hindenberg made hasty preparations for a drive on the Narew front between Ostralenka and Pultusk. On July 12 the Germans began offensive operations along the Narew-Bobr front and by July 18 they had driven the Russians back to the river line from Ostralenka to Ossowetz and were seriously threatening the bridgeheads. On the 20th they captured the outworks of Rozan, north of the Narew, and the 23d they forced the bridgeheads of Rozan and Pultusk. On the 23d, 24th and 25th, ten divisions crossed the Narew between Pultusk and Ostralenka and began a southern drive between the Narew and the Bug similar to Mackensen's drive from the south. After many days of furious battle Hindenberg's troops had not advanced by Aug. 5 at any point more than 10 miles from the Narew.

Mackensen meanwhile had renewed on July 15 his offensive operation against the Cholm-Lublin railway. His artillery swept away the Russian lines in the district of Krasnostaw on July 17, but when his infantry had advanced into the gap beyond the immediate support of his great batteries, the Russian infantry drove it back. After 15 days of terrific fighting Mackensen had reached the railway at Cholm but he had advanced only 15 miles and it was evident to all observers that he could not directly force the evacuation of Warsaw. The

decision came from an unexpected quarter. The fierce attacks of Hindenberg and Mackensen had had their effect elsewhere.

During the winter and spring the German armies had been unable to make any serious impression upon the Bzura-Rawka lines west of the Vistula. On July 19 the Russians evacuated these lines with very little fighting and retired on the Blonie lines, which form a semi-circle around Warsaw with a radius of 10 or 12 miles, west of the Vistula. The Germans on the 30th succeeded in crossing the Vistula about 20 miles north of Ivangorod, and a Russian corps was withdrawn from the Blonie lines to oppose the advance of these troops northward on Warsaw. By Aug. 1 two German corps were east of the Vistula. German reinforcements poured in from the west and Austrians came from the Serbian frontier, and the Russians did not have troops to oppose them. Ivangorod fell on Aug. 4, and this exposure of the flank of the force opposing Mackensen made it necessary to withdraw from the Blonie lines and give up Warsaw. The troops began to retire on the night of Aug. 3-4 and marched to support the Narew lines. The evacuation of Warsaw being already completed, the last troops recrossed the Vistula about midnight of Aug. 4-5, and at 3 a. m. on the 5th the bridges were blown up. The Germans entered Warsaw at 6 a. m. The retiring Russians formed a strong rear guard for the retreat on Brest-Litovsk.

The Russian Retreat from Warsaw.—The withdrawal from Warsaw was a most difficult operation on account of the necessity of protecting the Warsaw - Bielostok - Grodno - Vilna-Dvinsk-Petrograd railway, which from Warsaw to Dvinsk, a distance of about 380 miles, was almost everywhere within less than 50 miles of the German lines. Ultimately this road passed into the hands of the Germans as far as Dvinsk, but they gained possession of it only after the retreating Russians had retired along it or to the eastward. Bielostok fell on Aug. 25, Grodno on Sept. 2, and Vilna on Sept. 18. The points of greatest danger were at Novo Georgievsk, Ossowetz, and Kovno, where railways from Prussia crossed the Russian defensive line to join the main railway respectively at Warsaw, Bielostok, and Vilna. Furthermore, the capture of Riga and Dvinsk would probably have had fatal effects on the Russian retreat. The importance of preventing the Germans from using the railway which passes through Novo Georgievsk led the Russians, contrary to their practice everywhere else, to leave a garrison in the fortress, which held out until Aug. 19, when the railway had ceased to be of much strategical value.

After the capture of Warsaw, the great object of German strategy was to separate the Russian armies into two groups by driving them back upon the Pripet Marshes, one of the most formidable natural obstacles to military movements in Europe. These marshes form a great triangular-shaped wedge, with an area of 30,000 square miles, having its apex a little east of Brest-Litovsk. At Pinsk, 90 miles east of Brest, the wedge is 120 miles wide. A single north and south railway crosses the marshes 35 miles east of Pinsk, and by the capture of this railway the Germans would have severed the Russians' armies to the north of the marshes from those to the south. The area to the south of the Pripet Marshes is of less vital importance than that to the north and is more easily defended. It was necessary, therefore, for the greater part of the Russian forces to retire to the north of the marshes.

Three groups of armies pressed upon the retreating Russians. Hindenberg's group from the north and Mackensen's from the south aimed at cutting off the Russian retreat at Siedletz, about 60 miles east of Warsaw, while a new group of armies under Prince Leopold of Bavaria advanced eastward from Warsaw and Ivangorod. By Aug. 15 all danger of the Russian armies being cut off at Siedletz had passed and the greater part of the Russian force had reached the line Bielostok-Brest-Litovsk-Kovel. From Bielostok this line continued northward *via* Grodno and Kovno to Riga. Kovno, the strongest position on this line, fell on Aug. 17, and on the 22d the Russians evacu-

ated Ossowetz, which had defied all attempts to take it by direct attack. On the 16th, the Russian commander of Brest-Litovsk ordered the complete evacuation of the town, and on the 25th the Russians withdrew. Before evacuating the city, the Russians applied the torch and when the Austro-Hungarians entered, they found it a "sea of fire." Interest now shifted to the north, where the Germans began drives to the north and south of Vilna in order to isolate the army defending that place. On Aug. 26 the Russians evacuated the fortress of Olita on the Niemen, 45 miles southeast of Vilna, and retired on Vilna. Whilst these events were taking place, the Germans made two unsuccessful attempts to take Riga by naval attack, on Aug. 9 and again on Aug. 18. In the second attack it was reported that the Germans lost one battle cruiser, two smaller cruisers, and several destroyers. These attempts were followed by three weeks of efforts on the part of the Germans to force a crossing of the Dvina between Riga and Dvinsk.

A first attempt to take Vilna by a drive to the south of the city in the first part of September failed, but when the attack to the south was renewed in connection with an attack to the north, Vilna was given up on Sept. 18. By Oct. 1 the Russians had straightened out their lines and were in a position to hold their adversaries. From Riga the lines ran southeast along the Dvina to Dvinsk, and thence almost due south, crossing the Pripet Marshes at Pinsk, to the Dniester. The Austrian advance eastward through the marshes had been slow and laborious, but it had kept pace with the general advance. By the end of September, it had reached Pinsk; but here its further progress was stopped, and the great objective of the German strategy, the railway across the marshes, remained in Russian hands.

South of the Pripet Marshes, the Austrians entered Kovel on Aug. 23, two days before the fall of Brest-Litovsk. On the 27th they began operations against the upper Bug and Zlota Lipa line and the Russians withdrew to the eastward. On the 31st the Austrians captured the fortress of Lutsk and crossed the Styr River, a southern branch of the Pripet. From the Zlota Lipa the Russians withdrew to the Strypa and then to the Sereth River. On Sept. 7 the Austrians entered Dubno, which had been evacuated by the Russians. They were now within a few miles of Rovno, the most important railway center south of the Pripet Marshes.

The Russians Resume the Offensive.—On Sept. 5 the Czar assumed command of all the land and sea forces operating in the theatre of war. This was the signal for a more aggressive attitude on the part of the Russians. Near Tarnapol, on the Sereth, the Russians took the offensive on Sept. 8 and captured 8,200 prisoners, 30 guns, 14 of which were of heavy calibre, and many machine guns. At Trembovla, 20 miles south of Tarnapol, the Russians captured 7,000 men, three guns, and 36 machine guns, on the 7th and 8th. The Austrians withdrew towards the Strypa. On Sept. 24, the Russians recaptured the fortress of Lutsk with 4,000 prisoners. During the month of September they captured more than 100,000 prisoners south of the Pripet Marshes. The successes of General Ivanoff, who commanded the Russian armies in this region, compelled the Austro-Germans to concentrate large forces in his front. At the close of September the Austro-Germans began a new offensive and the Russians retired to about 20 miles east of Lutsk. Since Oct. 1 the Russians have held their lines on the eastern front. The German pressure on Riga and Dvinsk has been steady, but the Russians have frequently taken the offensive and won local successes. South of the Pripet Marshes the Russians have continued to be aggressive. On Nov. 9, they gained a victory near Kolki on the Styr and captured 3,500 prisoners, and on Christmas Day they began with heavy force a new offensive against Bukowina.

Italy Enters the War.—The Austrian district of Trentino is a mountainous bastion, strongly fortified, which projects into the Lombardo-Venetian plain of northwest Italy. Likewise, the Italian province of Venetia makes a salient, east of the Trentino, into Austrian territory.

The east, north, and northwest sides of this salient are known respectively as the Isonzo, Carnia, and Cadore fronts. The Austrian military frontier possessed natural strength. Everywhere along the Austro-Italian frontier Italian plains look up at Austrian mountains, except for a stretch of about 25 miles, from Cividale to the Adriatic, along the Isonzo River on the eastern frontier of Italy. This eastern border, which extends for a distance of 50 miles, from Pontebba to the sea, is the only place where an Italian offensive promised large results. But almost the entire Austrian frontier, which was well nigh impervious to Italian attacks, offered almost unequaled opportunities for an Austrian offensive against the wealthy and populous districts of northern Italy. It was therefore necessary for large Italian forces to watch the Austrians around an extensive front which could be held by small forces of Austrians. In the Trentino, the city of Trent offered an objective strictly limited in value; for, beyond Trent, the Tyrol may be considered as unattackable. On the Isonzo front, Trieste was the natural goal of the Italian offensive. Two parallel railways, 10 miles apart, lead eastward from the Isonzo front, one from Gorizia following the valley of a branch of the Isonzo, the other from Monfalcone, *via* Carso, following the seacoast direct to Trieste.

After prolonged negotiations (see III, *International Relations*) Italy declared war on Austria on May 23 from the following day. The first act of hostility took place on the morning of the 23d, when Austrian aircraft attempted to attack the arsenal at Venice. There was much skirmishing on the frontier and at 7 p. m. Austrian artillery opened fire on the frontier of Carnia. On the 24th the Italian troops entered Austrian territory on all the fronts and drove the Austrian forces back to their fortified lines, encountering little resistance. On the 26th the Italian Government declared a blockade of the Austro-Hungarian coast from the Italian to the Montenegrin frontier and of the Albanian shore from the Montenegrin frontier to Cape Kephali. The Allied fleets already controlled the sea, and the Italian fleet took over from them the duty of watching the Austrian navy.

Italy and Germany remained at peace, and so long as this peace lasted Italy had no cause to fear a serious attack from the Austrian frontier; but her first care was to occupy and fortify lines that should be able to withstand a great drive of the Central Powers in case Germany should declare war against her. In addition, the Italian strategic plan contemplated a limited offensive on the Trentino, Cadore, and Carnia fronts, while the main attack against Austria should be made on the Isonzo front. A successful advance east across the Isonzo would result not only in the capture of Trieste but would also cut the Austrian railway communications with Pola and Fiume and isolate Austria from the sea.

The Italian campaign has been marked by the absence of great and striking events. The natural strength of the Austrian positions and the care with which they have been fortified have made Italy's task one of tremendous difficulties. On May 31 Italian and Austrian reports showed that the Italian offensive was making headway on three sides of the Trentino and that it had arrived within ten miles of Trent. On June 2 the Italian General Staff announced the crossing of the Isonzo by the Italian army, begun on May 27; on the 9th the Italians captured Monfalcone, five miles beyond the Isonzo, a base of the Austrian torpedo craft, 20 miles from Trieste; and on the 11th they occupied Gradisca on the Isonzo, six miles southwest of Gorizia. On July 2 the Italians began a struggle for the Carso plateau on the coast road to Trieste which resulted in partial success on July 25. But when the infantry had gained the crest of the Carso plateau, they found that it was dominated by a converging fire; they held it for a few days and then retired a short distance where shelter could be found. The Austrians occupy the other slope and the summit is no man's land.

The Conquest of Serbia.—On the last day of September von Mackensen massed 250,000 men and 2,000 guns on the northern frontier of Serbia.

Two days later Bulgarian troops began to mass on her eastern frontier, and a German battalion attempted to cross the Danube at Semendria and was repulsed. On Oct. 11 the Bulgarians crossed the Serbian frontier at several places east of Nish and Bulgaria entered the war as the ally of Germany, Austria, and Turkey. French and British troops began to land at the Greek port of Saloniki on Oct. 5, at the invitation of the Greek Premier, M. Venizelos, to enable Greece to fulfil her treaty obligations to send troops to aid Serbia in case Serbia were attacked by another Balkan state. King Constantine, on the 5th, declined to carry out these obligations and Venizelos immediately resigned (see *Greece*, this Department, *supra*). The Allied troops, however, continued to land and presently moved northward along the Saloniki-Nish railway.

The Austro-German armies crossed the Drina, Save, and Danube on Oct. 6, and began a southward march extending across the whole of Serbia. The main purpose of the Central Powers was to open the Belgrade-Nish-Sofia-Constantinople railway for the shipment of war supplies to the Turks and to enable the Germans to operate against British dependencies in Asia and Africa. The plan of the Germanic allies called for the Austro-Germans to push south along the railway to Nish, while the Bulgarians moved westward toward the same place. From Nish a railway leads south and southeast to Saloniki. The danger of Allied assistance reaching the Serbs over this line, made its interruption in the vicinity of Uskub, in southern Serbia, a matter of prime importance to the Central Powers, and caused the Bulgarians to make their main attack in this quarter. Bulgarian columns accordingly advanced against Vranya, about 50 miles northeast of Uskub, and against Vilandovo, about 80 miles southeast of Uskub. The Bulgarians also directed a secondary attack against Nish. The Serbs were outnumbered several times by their enemies. The Bulgarian advance against Nish was through a difficult, mountainous country, and was extremely slow; that against Vranya and Vilandovo was through a more open country and progressed more rapidly.

The average rate of the advance of the Austro-Germans during the month of October was two miles a day. They took Belgrade on Oct. 9, and Semendria on the 11th. The Serbs transferred their capital on Oct. 19 from Nish to Prisrend in western Serbia. On the 27th the Austro-Germans and the Bulgarians effected a junction in northeast Serbia. Meanwhile, the Allied troops moved north from Saloniki. On Oct. 16 the French and Serbs repulsed the Bulgarians at Vilandovo, but on the 17th, the Bulgarians cut the Nish-Uskub railway at Vranya. On Oct. 20 the Bulgarians occupied Veles, about 30 miles southeast of Uskub, and on the 22d, Uskub; on the 25th the French-Serbians drove the Bulgarians from Veles, and on the 27th the Serbians recaptured Uskub. On the 29th, Veles was again taken by the Bulgarians.

At the end of October the Central Powers had occupied about one-third of Serbia. The Serbian army in the north was in evil plight. Mackensen was pressing it in front; the Austrians were attacking its left flank from the west; and the Bulgarians were assailing its right from the east. Kragujevatz, the chief Serbian arsenal, about 50 miles south of the Austrian frontier, fell on Nov. 1; Nish fell on the 5th; and the invaders soon overran the entire country. By Nov. 20, about three-fifths of the territory of Serbia had passed into the hands of the Central Powers. The main Serbian army was finally broken, about Nov. 23, on Kossovo Plain, in central Serbia, and the German headquarters announced, Nov. 28, that "with the flight of the scanty remnants of the Serbian army into the Albanian mountains our main operations are closed." By Dec. 1 the Central Powers had forced the remnants of the Serbian armies into the mountains of Montenegro and Albania and had occupied all Serbia with the exception of a few narrow strips along the south and west border.

The foremost French troops occupied an intrenched camp in the district between the Vardar River and its tributary the Tcherna, near Kri-

volak in southern Serbia; the British occupied the district of Doiran and Vilandovo, on the right of the French. Both were faced by superior forces of Bulgarians who interposed between them and small bodies of Serbs retreating on Monastir. On Dec. 6 the Bulgarians in great strength began to attack the French and British forces in southern Serbia. The Allies retired slowly before the Bulgarians. On the 15th the Bulgarians drove a wedge between the British and the French. The Allies retreated into Greek territory and occupied a defensive position to protect their base at Saloniki. At the close of the year the French troops occupy a semi-circle around Saloniki with their left on the Vardar River, their center facing the Greek frontier near Doiran, and their right in contact with the British forces in Chalcidice.

The Dardanelles Campaign.—The attack on the Dardanelles was an effort on the part of the Allies to break the bonds that bound Russia within her dominions. Russia could receive foreign supplies only by the long and difficult routes *via* Archangel, on the White Sea, and Vladivostock, on the Pacific Ocean, but these routes were not available for the bulky shipments of grain which form the most important part of Russia's exports. Immeasurable advantages would come to the Allied cause from opening the way to the Black Sea so that wheat could pass out and munitions of war could go in.

When Turkey joined the Germanic allies in the fall of 1914, a French-British squadron blockaded the entrance to the straits. In January the Allies decided on a naval attack upon the Dardanelles and in February a powerful fleet assembled for the purpose. They began operations with the expectation that Greece would join them and furnish military support; but the prospects of Greek aid were dashed on March 6 by the resignation of M. Venizelos, the Greek Premier, who favored the Allied cause. The campaign was continued in the belief that it was possible to reduce the defenses and dominate Constantinople by means of a gigantic fleet without military assistance. Vice-Adm. Sackville Carden commanded the Allied fleet, which included the newest super-dreadnought, the *Queen Elizabeth*, the battle-cruiser *Inflexible*, fresh from the Falkland Islands victory, and a French squadron under Rear-Admiral Guepratte. The islands of Tenedos and Lemnos were occupied, the latter with the tacit consent of Greece, and the bay of Mudros on the south coast of Lemnos became the advance base of operations.

The straits are over 40 miles long, and at one point, where the defenses are strongest, are less than one mile wide. There are powerful fortifications at each end, and forts at the narrowest part of the channel, which was heavily mined. The coast defenses bearing on the Dardanelles were among the most formidable in the world. They consisted of batteries of 9.2-in., 10-in., 10.2-in., 11-in., and 14-in. guns, supplemented with field batteries, howitzers mounted on railway trucks, motor artillery, mine fields, floating mines, land torpedo tubes, and torpedo boats. The narrow part of the straits from the village of Gallipoli to the Ægean is 33 miles in length; the breadth varies from 1,400 yds. at the Narrows, about 16 miles from the western entrance, to 7,000 yards about eight miles within the straits. The mid-channel depth varies from 25 to 55 fathoms. A surface current of comparatively fresh water flowing westward with a speed of 1½ knots was favorable to the Turks in the use of floating mines, and an under current of salt water flowing eastward has assisted the British submarines in reaching the Sea of Marmora. The Peninsula of Gallipoli, on the European side, consists of masses of steep, barren, rocky heights attaining altitudes of from 300 to 1,000 ft. It varies in breadth from 4¼ miles at the Isthmus of Bulair, where it joins the continent of Europe, to 12 miles in the vicinity of the Narrows. On the Asiatic side the country consists of rolling hills covered with woods and pastures. The Gallipoli Peninsula has not sufficient water for a large force.

On Feb. 19 the combined Allied fleet made an attack on the batteries at the entrance to the straits. Much

damage was done and with one exception all were silenced at the close of the day. None of the ships was hit. After five days of bad weather the attack was renewed on the 25th. The action, in which the *Queen Elizabeth* took part, began at 10 a. m., and closed at 5 p. m., when all the batteries were silenced. The following night North Sea trawlers cleared the straits of mines "up to four miles from the entrance." On the 27th, the battleships *Albion* and *Majestic* entered the straits and bombarded Fort Dardanus, 12 miles from the entrance. Beginning on March 1, the battleships entered the straits almost daily and the mine sweepers worked at night, and it was thought that success would soon crown the attack. On March 1 and 2 the Allied ships went 10 miles up the straits and bombarded Fort No. 8, which is on Cape Kephez, and Fort No. 9 immediately opposite on the European shore. On the evening of the 2d, Fort No. 9 was silenced. Several ships, including the *Queen Elizabeth*, entered the Gulf of Xeros and used indirect fire across the Gallipoli Peninsula at the great forts of Kalid Bahr and Chanak upon the European and Asiatic shores at the Narrows, under the direction, by wireless, of ships in the straits. On March 17 Gen. Sir Ian Hamilton arrived at Tenedos to take command of a military expedition assembled to attack the defenses from the rear. General Hamilton found that the transports had been wrongly loaded and he ordered most of them to return to Egypt to unload and reload.

On March 20 six British battleships, the *Queen Elizabeth, Inflexible, Agamemnon, Lord Nelson, Triumph,* and *Prince George*, and four French battleships, the *Suffren, Gaulois, Charlemagne*, and *Bouvet*, entered the straits to bombard the forts. After the forts were silenced, six British ships, the *Vengeance, Irresistible, Albion, Ocean, Swiftsure*, and *Majestic*, advanced to relieve the other ships. As the French ships were passing out, the *Bouvet* struck a mine and sank in less than three minutes with the greater part of her crew. The relief ships renewed the attack on the forts, which resumed their fire. In less than two hours the *Irresistible* quitted the line with a heavy list and later sank, "having probably struck a mine." Soon the *Ocean* also struck a mine and sank. Practically the entire crews of the two British ships were removed before the vessels sank. The Turks with their German advisers had, in a great measure, replaced, by means of heavy howitzers and field guns, the destruction of the fixed defenses; and it has been claimed, in some quarters, that at least one of the three ships sank as a result of gunfire. The *Inflexible* also struck a mine but she made her way to Tenedos and ultimately to the great naval base in the North Sea.

The Allies had now learned, by a serious reverse, what has to be learned anew in almost every war, namely, that a good system of coast defenses can withstand the attacks of the most powerful fleet of the epoch. Desultory operations were continued by the combined fleet against the Turkish defenses, while it awaited the return of the transports. Five precious weeks were lost because of the determination of General Hamilton to send the transports to Egypt to reload. Similar action by General Shafter at Santiago, for which there was probably equal reason, would have destroyed all chance of taking that city in 1898.

The outer coast of the northern half of the Gallipoli Peninsula, from Suvla Bay to Bulair, is impracticable for landing, as it consists of sheer bluffs except at a few narrow gullies, far too restricted for any serious military movements. Sir Ian Hamilton, therefore, was limited to a stretch of coast line about 20 miles in length extending from Cape Suvla to the entrance to the straits. Even within these narrow limits the general character of the shore is precipitous, the possible landing beaches probably do not exceed 10 in number and these are generally only a few hundred yards wide. Every beach, as far as the English general could ascertain, was covered by trenches, entanglements, machine guns, and artillery. History does not record a hardier or more ill-advised feat of arms than that undertaken and car-

ried out by General Hamilton. He placed his main reliance upon the 29th Division, one of the last available regular divisions of the British Army. In addition he had a territorial division, a naval division, an Indian division, an Australian and New Zealand Army Corps (A. N. Z. A. C., hence the popular expression "Anzacs"), and a French army corps —a total of three corps or about 120,000 men. Only a small part of these participated in the great battle of the landing of April 25, 1915. Over 150,000 Turkish troops with a numerous artillery and substantial contingents of German soldiers were assembled to oppose the invasion. General Hamilton finally determined to land troops of the 29th Division upon five beaches, named S, V, W, X, and Y, upon either side of Cape Hellas, the westernmost point of the Gallipoli Peninsula. The Australasian corps was to land at Beach Z, 11 miles northeast from Beach Y; and the French corps was to make a feint at landing near Kum Kale on the Asiatic shore. The 29th Division, after landing, was to seize Achi Baba, a hill 700 ft. high which dominates the west end of the Gallipoli Peninsula. The Allies succeeded in making a landing, but at the end of eight months the Turks still held Achi Baba.

The troops designated for the landing were placed aboard battleships and mine sweepers at Tenedos on April 24, and towards midnight the ships, towing cutters and other small boats, started for Cape Hellas. Two of the landings, at S and Y, were made at early dawn; the others a half-hour later, after the way had been prepared by the fire of the battleships. At S, 700 men landed with a loss of 50. They secured a good position and held it against all attacks. At Y, two battalions landed with small losses at first, but they were vigorously attacked and after suffering "deplorable" losses were compelled to reëmbark. The other landings of the 29th Division were successful but at a terrible cost. At V, one boat disappeared and practically all the occupants of several other boats were killed. A "stout collier" filled with 2,000 men was run aground on this beach, and an attempt was made to land over rafts. Nearly all of the first thousand who attempted to land were killed or wounded, but after dark the second thousand went ashore without a single casualty. The Australians landed 4,000 men at Beach Z at about 4:50 a. m. and by 2 p. m. the number had grown to 12,000. The troops first ashore met with little opposition, but by noon 20,000 Turks were attacking them. A French regiment, 2,800 strong, landed on the Asiatic shore at about 9.30 a. m., under a terrific fire, captured 400 prisoners and made good its position with the loss of one-fourth of its numbers. The battle at all of the beaches continued throughout the day and night. When night came, all of the forces were isolated from each other, except those landed at Beaches W and X, who had effected a junction. The Turks made persistent attacks on the 26th and 27th. On the 26th, the French regiment, which had been landed in order to prevent the Turks from making effective use of the Asiatic shore to attack the troops landing on the Peninsula, was withdrawn, and the French corps began to land at Beach V. By the evening of the 27th, the Allies had established themselves on a line three miles long on either side of Cape Hellas. On the 28th they began a general advance, and as the result of seven days' fighting, they forced their way forward about 5,000 yds. from the landings. The British losses in the first 10 days' battle were 13,377. From May 6 to 8, the Allies made persistent efforts, which resulted in the gain of 600 yds. on the right of the British line and 400 yds. on the left. Meanwhile, more troops had been disembarking, and on the 11th it was possible, for the first time, to withdraw the 29th Division from the firing line. The Anzacs had established themselves firmly on a semi-circle with a radius of 1,100 yards, but they were unable to make decisive gains. By May 11, the operations on the Peninsula had assumed all of the characteristics of siege warfare, which continued until, at the close of the year, the enterprise was abandoned and the troops withdrawn. The Allies were matching a little army of 120,000 men against a

reservoir of at least half a million. While they were successful in attaining their immediate purposes, the attack on the Dardanelles had the effect of restraining Turkish activities in other important theatres.

Turkish Attack on Egypt.—Egypt has served as a great central depot of the British Empire for the training and despatch of troops. In December, 1914, the British garrison in Egypt consisted of an Australasian corps (Australians and New Zealanders), an English territorial division, and a mixed force of Indians, Imperial Service troops and regulars in strength equal to a large army corps. The bulk of these troops were in training camps at Cairo, Heliopolis and the Pyramids. The Suez Canal was guarded by Indian troops and the fleet, and during the fall and winter of 1914 it was fortified by all the devices that had been found of service upon the battlefields of Europe.

The Suez Canal serves as a great wet ditch for its own defense and for the protection of Egypt against Turkish invasion. It is about 107 miles in length, but the part requiring strong defense does not exceed 40 miles. From Port Said, on the Mediterranean, to El Kantara, a distance of about 32 miles, the canal runs along the eastern shore of Lake Menzaleh and does not require much protection; from this point to Ismailia it passes for 17 miles through the desert; between Ismailia and Tussum, it passes for three or four miles through Lake Timsah; thence for nine miles through the desert; then through Great and Bitter Lakes, which form an effectual barrier for 21 miles; and thence through the desert for 14 miles to Suez at the head of the Red Sea. Thus there are three stretches of 17, 9, and 14 miles which require active defense. A railway follows the western bank of the canal from Port Said to Suez. At Ismailia, which is about midway between extremities of the canal, this railway connects with the Cairo Railway. Three roads lead from Syria across the desert to the canal. (1) A coast road parallels the shores of the Mediterranean *via* Rafa and El Arish to El Kantara. This road is supplied with fresh water, but is sandy and almost impassable for heavy wheeled vehicles. (2) A parallel road about 35 miles to the south leads from Beersheba to Ismailia, through a hilly country with a firm surface, almost destitute of water. (3) A difficult road farther south leads from Nakhl to Suez.

Early in January the Turks concentrated three divisions under Djemal Pasha at Hebron with some irregulars and auxiliary troops, a total of about 30,000 men. This force was divided into three columns, in accordance with the number of available routes. About 6,000 men were assigned to the northern, and 3,000 men to the southern column. The main body was to follow the central route, made practicable by an unusually heavy rainfall in December, and march on Ismailia. The army left Hebron on Jan. 11. On the 26th the northern column was engaged with the covering troops near El Kantara, and on the 27th, the southern column attacked the British posts at El Kubri, about four miles north of Suez.

After dark on Feb. 1, a Turkish division with pontoons and rafts advanced to the canal at Tussum and Serapeum, south of Lake Timsah, unaware that the opposite bank at the point selected for crossing was heavily manned with troops. The defenders opened fire upon the Turkish troops crowded upon the opposite bank, and the torpedo boats and other small craft joined in the battle at dawn. By 3 p. m., on the 2d, the Turks were in full retreat. On the morning of the 3d, a Turkish division advanced against the line of the canal just north of Lake Timsah. The British artillery kept the Turks from coming within 1,000 yds. of the outpost line, and dawn of the 4th found them gone. The northern column made a night attack at El Kantara and El Ferden on the 3d, and was repulsed. The British took the offensive on the morning of the 4th against the central column, and put it to flight, and on the afternoon of the 4th, the entire Turkish force beat a retreat. The total British loss was 115 killed and wounded. The British buried 900 Turks and captured 650. The greater part of the Turkish army retreated into Syria, leaving about

7,000 men at El Arish on the northern route and at Nakl on the southern route. The Turks made small raids against the Canal on March 22, April 29, and early in June, which were easily repulsed.

The Tigris-Euphrates Campaign.—In November, 1914, a mixed British and Indian division under General Barrett defeated the Turks near the head of the Persian Gulf and occupied Bassorah, on the Euphrates, the proposed terminus of Berlin-Byzantium-Bagdad-Bassorah railway, about 60 miles from the Gulf. In January, 1915, this force made a further advance and captured Kurna, which lies at the junction of the Tigris and Euphrates, 60 miles above Bassorah. In April a second division was added and General Sir John Nixon assumed command. On April 11 and 12 the Turks attacked Kurna and Shaiba, near Bassorah. They were repulsed from Shaiba, and fled in disorder to Nasiriyeh on the Euphrates, about 90 miles from Kurna. Here they were defeated on July 24 by a force sent up the Euphrates from Kurna, losing 2,500 prisoners and 15 guns.

The Turks were also repulsed in their attack on Kurna and withdrew up the Tigris. On Sept. 28 they were defeated at Kut-el-Amara on the Tigris, about 100 miles from Bagdad and 125 miles from Kurna, and were pursued towards Bagdad. The British, under General Townshend, attacked the Turks in position at Ctesiphon, about 20 miles from Bagdad, on Nov. 22, and after a prolonged and severe battle drove the Turks from the field, capturing 1,600 prisoners. The following night the Turks made a counter attack and were repulsed, but they received heavy reinforcements, and the British, on the 25th, began to retire upon Kut-el-Amara, after having sent their wounded down the river in steamers. On the night of Nov. 30, General Townshend fought a rear guard action with the Turks at Azzie, about 30 miles from Kut-el-Amara. The British casualties at Ctesiphon and at Azzie numbered 4,567. On the night of Dec. 12 the Turks were repulsed in an attack on the position at Kut-el-Amara and thereafter undertook operations to encircle the British force.

Campaign in the Caucasus.—Late in December, 1914, Enver Pasha with three Turkish corps made an attempt to advance in Transcaucasia in order to divert Russian troops from the frontiers of Germany and Austria. The theatre was mountainous and difficult, the weather was very severe, and the troops lacked proper equipment for a winter campaign. On Jan. 1 the Turks occupied Ardahan, a fortified Russian town, but on the 3d and 4th, they were completely defeated. The 9th Turkish Corps surrendered with all its artillery, and the two other corps were routed. Since then fighting in this theatre has been intermittent, with the Russians advancing slowly in Armenia and Persia.

Conquest of German Southwest Africa.—The rebellion which broke out in South Africa in October, 1914 (*A. Y. B.*, 1914, p. 167), was finally brought to a close with the surrender, on Feb. 3, of Kemp, the last rebel leader, and the South African forces under the command of General Botha, Premier of South Africa, undertook the conquest of German Southwest Africa. A railway extends from Luderitzbucht, a port on the southern coast, to Gaisi in the north central part of the colony, with a branch line from Karibib to Swakomund on the west coast, near Walfish Bay. The British had occupied Luderitzbucht on Sept. 19, 1914, and Swakomund on Jan. 14. The South African forces entered the colony in two main divisions—one from Luderitzbucht in conjunction with columns from the south and east converging on Keetmanshoop, which was occupied on April 20, and the other from Swakomund. Both divisions followed the railway and formed a junction at Windhuk about May 12. After a short pause the combined forces pursued the retreating Germans to the northern terminus of the railway. General Botha's forces, which greatly outnumbered the Germans, moved on wide fronts, and by outflanking the Germans on both flanks compelled them to abandon successive prepared positions without a struggle. The difficulties of the campaign arose from the great distances to be traversed through a roadless, arid coun-

try in which an attempt had been made to poison the wells. Botha captured 750 prisoners at Tsumeb, a few miles east of Gaisi, on July 8 and on the 9th, Governor Seitz surrendered all the German forces in Southwest Africa, numbering 204 officers and 3,293 men, with 37 field guns and 22 machine guns. In five months the Germans were driven from 1,300 miles of railway. The cost of the campaign was estimated at $80,000,000.

German Methods of Warfare.—In their conduct of the war the Germans have claimed freedom to disregard treaties, law, and humanity, everything which the people of the world have hitherto depended upon as guarantees for security. At the outset they invaded and crushed a country the neutrality of which they were pledged by treaty to respect, and they have repeatedly violated the recognized rules of civilized warfare by the burning of towns, the destruction of monuments, the bombardment of unfortified places, the imposing of ransoms, the taking of hostages and their execution, the use of poisonous gases, and the taking of life of peaceful voyagers at sea. The superior discipline and training claimed for the German forces entitled the world to expect superior restraint from them. But the commission, headed by Viscount Bryce, which investigated the question of atrocities committed in Belgium, came to the following conclusion:

1. That there were in many parts of Belgium deliberate and systematically organized massacres of the civil population, accompanied by many isolated murders and other outrages.

2. That in the conduct of the war, generally, innocent civilians, both men and women, were murdered in large numbers, women violated, and children murdered.

3. That looting, house burning, and the wanton destruction of property were ordered and countenanced by the officers of the German Army, that elaborate provision had been made for systematic incendiarism at the very outbreak of the war, and that the burnings and destruction were frequent, where no military necessity could be alleged, being indeed part of a system of general terrorization.

4. That the rules and usages of war were frequently broken, particularly by the using of civilians, including women and children, as a shield for advancing forces exposed to fire, to a less degree by killing the wounded and prisoners, and in the frequent abuse of the Red Cross and the white flag.

Losses of the War.—The British losses on all fronts up to Dec. 9, according to a statement of Mr. Asquith, were 119,923 killed, 338,758 wounded, and 69,546 prisoners, making a total of 528,227. Of the total losses, 387,988 were incurred in France and Belgium, 114,555 at the Dardanelles, and 25,684 elsewhere. The total casualties as published in the official casualty lists for Prussia, Saxony, Bavaria and Wurtemburg up to Nov. 30 were reported to amount to 2,524,460. Of these, 484,218 were killed or died of wounds, 384,198 were severely wounded, 27,674 died of disease, and 381,149 were missing. The German naval casualties were not included in the foregoing lists. Another statement, based upon the official casualty lists, placed the Prussian losses alone, including Nov. 30, at 2,244,248.

V. THE NATIONAL ADMINISTRATION

THE PRESIDENT AND VICE-PRESIDENT

President.—Woodrow Wilson, Democrat, of New Jersey, inaugurated twenty-eighth President of the United States on March 4, 1913.

The President and Vice-President are elected for terms of four years by the state electoral colleges, whose membership is based on the Congressional apportionment. This apportionment is revised after each decennial census, as shown in the table in the YEAR BOOK for 1912 (p. 159). The official figures of the popular and electoral votes in the Presidential elections of 1908 and 1912 are given in the table on the following page. The salary of the President is $75,000, with an allowance of $25,000 for traveling expenses.

Secretary to the President.—Joseph Patrick Tumulty, of New Jersey. The General Deficiency Appropriation Act continues the salary of the Secretary to the President at $7,500 per year, to which it was raised from the statutory amount of $6,000 in 1911 at the request of President Taft.

Vice-President.—Thomas Riley Marshall, Democrat, of Indiana, inaugurated Vice-President of the United States on March 4, 1913.

The Vice-President presides over the Senate, with no vote except in case of a tie. His salary is $12,000. The President *pro tempore* of the Senate, who presides in the absence of the Vice-President, is Senator James P. Clarke (Ark.).

EXECUTIVE DEPARTMENTS

Ten Cabinet officers, constituting the President's advisory council, each in charge of one of the great Departments of the Government, are nominated by the President and confirmed by the Senate, for a term subject to the President's pleasure. The salary of the Cabinet officers is $12,000 each.

With the exception of the Secretary of State (appointed 1915) and the Attorney-General (appointed 1914), the members of the present Cabinet were nominated by the President and confirmed by the Senate on March 5, 1913. By Act of Congress, in the case of vacancy in office of President through the death or removal of both President and Vice-President, the Cabinet officers succeed to the Presidency in the order indicated below.

DEPARTMENT OF STATE

Secretary of State.—Robert Lansing, N. Y., was appointed Secretary of State *ad interim* on June 9, succeeding William Jennings Bryan (Neb.), resigned. He was appointed Secretary of State on June 23, took the oath of office on June 24, and was confirmed by the Senate on Dec. 13.

Robert Lansing was born in Watertown, N. Y., Oct. 17, 1864. He was graduated from Amherst College with the degree of A. B. in 1886, was admitted to the bar in 1889, and practiced law at Watertown from 1889 to 1892. In 1892 he became associate counsel for the United States in the Bering Sea arbitration, and thereafter devoted his attention principally to the practice of international law. He was counsel for the United States before the Bering Sea Claims Commission, 1896-7; solicitor and counsel for the United States before the Alaskan Boundary Tribunal, 1903; counsel for the United States in the Atlantic fisheries arbitration, 1908-10; technical delegate in the conference for modification of the fisheries award, 1911-12; technical delegate in the Fur Seal Conference at Washington, 1911; special counsel for the Department of State on various pending diplomatic questions and for the negotiations with Great Britain of claims to be arbitrated under the special agreement of 1910;

VOTE FOR PRESIDENT, 1908 AND 1912

State	1908				1912						
	Taft, Republican		Bryan, Democrat		Wilson, Democrat		Roosevelt, Progressive		Taft, Republican		Debs, Socialist
	Electoral	Popular	Electoral	Popular	Electoral	Popular	Electoral	Popular	Electoral	Popular	Popular
Alabama	....	25,308	11	74,374	12	82,438	....	22,680	....	9,732	3,029
Arizona	....	.....	....	.....	3	10,324	....	6,949	....	3,021	3,163
Arkansas	....	56,760	9	87,015	9	68,838	....	21,673	....	24,467	8,153
California	10	214,398	....	127,492	2	283,436	11	283,610	....	3,914	79,201
Colorado	....	123,700	5	126,644	6	114,232	....	72,306	....	58,386	16,418
Conn	7	112,915	....	68,255	7	74,561	....	34,129	....	68,324	10,056
Delaware	3	25,014	....	22,071	3	22,631	....	8,886	....	15,997	556
Florida	....	10,654	5	31,104	6	36,417	....	4,535	....	4,279	4,806
Georgia	....	41,692	13	72,413	14	93,076	....	21,980	....	5,191	1,026
Idaho	3	52,621	....	36,162	4	33,921	....	25,527	....	32,810	11,960
Illinois	27	629,929	....	450,795	29	405,048	....	386,478	....	253,593	81,278
Indiana	15	348,993	....	338,262	15	281,890	....	162,007	....	151,267	36,931
Iowa	13	275,210	....	200,771	13	185,325	....	161,819	....	119,805	16,967
Kansas	10	197,216	....	161,209	10	143,663	....	120,210	....	74,845	26,779
Kentucky	....	235,711	13	244,092	13	219,584	....	102,766	....	115,512	11,647
Louisiana	....	8,958	9	63,568	10	60,971	....	9,323	....	3,834	5,249
Maine	6	66,987	....	35,403	6	51,113	....	48,495	....	26,545	2,541
Maryland	2	116,513	6	115,908	8	112,674	....	57,789	....	54,956	3,996
Mass	16	265,966	....	155,543	18	173,408	....	142,228	....	155,948	12,616
Michigan	14	335,580	....	175,771	....	150,751	15	214,584	....	152,244	23,211
Minnesota	11	195,843	....	109,401	....	106,426	12	125,856	....	64,334	27,505
Mississippi	....	4,363	10	60,287	10	57,227	....	3,645	....	1,595	2,061
Missouri	18	347,203	....	346,574	18	330,746	....	124,371	....	207,821	28,466
Montana	3	32,333	....	29,326	4	27,941	....	22,456	....	18,512	10,885
Nebraska	....	126,997	8	131,099	8	109,008	....	72,614	....	54,029	10,174
Nevada	....	10,775	3	11,212	3	7,986	....	5,620	....	3,196	3,313
New Hamp	4	53,149	....	33,655	4	34,724	....	17,794	....	32,927	1,980
New Jersey	12	265,326	....	182,567	14	170,282	....	145,409	....	88,834	15,900
New Mex	....	.....	....	.....	3	22,139	....	8,347	....	17,900	2,859
New York	39	870,070	....	667,468	45	655,475	....	390,021	....	455,428	63,381
No. Car	....	114,937	12	136,995	12	144,507	....	69,667	....	29,139	117
No. Dak	4	57,680	....	32,885	5	29,555	....	25,726	....	23,090	6,966
Ohio	23	572,312	....	502,721	24	424,834	....	229,807	....	278,168	90,144
Oklahoma	....	110,474	7	122,363	10	119,156	....	[1]	....	90,786	41,674
Oregon	4	62,530	....	38,049	5	47,064	....	37,600	....	34,673	13,343
Penn	34	745,779	....	448,778	....	395,619	38	447,426	....	273,305	80,915
R. Island	4	43,942	....	24,706	5	30,412	....	16,878	....	27,703	2,049
So. Car	....	3,965	9	62,290	9	48,357	....	1,293	....	536	164
So. Dak	4	67,536	....	40,266	....	48,942	5	58,811	....	[2]	4,662
Tennessee	....	118,324	12	135,608	12	130,335	....	53,725	....	59,444	3,492
Texas	....	65,666	18	217,302	20	219,489	....	28,530	....	26,745	24,896
Utah	3	61,028	....	42,601	....	36,579	....	24,174	4	42,100	9,023
Vermont	4	39,552	....	11,496	....	15,354	....	22,132	4	23,332	928
Virginia	....	52,573	12	82,946	12	90,332	....	21,777	....	23,288	820
Wash	5	106,062	....	58,691	....	86,840	7	113,698	....	70,445	40,134
West Va	7	137,869	....	111,418	8	113,046	....	78,977	....	56,667	15,336
Wisconsin	13	247,747	....	166,632	13	164,228	....	62,460	....	130,695	33,481
Wyoming	3	20,846	....	14,918	3	15,310	....	9,232	....	14,560	2,760
Total	321	7,679,006	162	6,409,106	435	6,286,214	88	4,126,020	8	3,483,922	897,011
Plurality	159	1,269,900	....	.....	347	2,160,194	....	.....	....	.....	.....

NOTE.—In 1908 there were cast for Debs (Socialist), 420,820 votes; for Chafin (Prohibitionist), 252,683; for Hisgen (Independence League), 83,562; for Watson (Populist), 28,131; for Gillhaus (Socialist-Labor), 13,825. In 1912 there were cast for Chafin (Prohibitionist), 208,923 votes; for Reimer (Socialist-Labor), 29,079. The total vote in 1908 was 14,887,133; in 1912, 15,031,169; these figures do not include blank or void ballots or scattering votes for names not appearing on any electoral ticket.

[1] Roosevelt electors not on ballot.

[2] Taft electors not on ballot.

and counsel, 1912; and agent, 1913-14, for the United States in the American and British claims arbitration. On March 27, 1914, Mr. Lansing was appointed Counselor for the Department of State, succeeding John Bassett Moore, and held that office until his appointment as Secretary of State. He is an associate editor of the *American Journal of International Law*, and the author of *Government, Its Origin, Growth, and Form in the United States*, and numerous articles on subjects pertaining to international law and arbitration.

Charged with negotiations relating to foreign affairs.

Assistant Secretary.—John E. Osborne, Wyo. $5,000.

Second Assistant Secretary.—Alvey A. Adee, D. C. $4,500.

Third Assistant Secretary.—William Phillips, Mass. $4,500.

Director of the Consular Service.—Wilbur J. Carr, N. Y. $4,500.

Counselor.—Frank Lyon Polk, N. Y. $6,000.

Mr. Polk, at the time of his appointment Corporation Counsel for New York City, was commissioned on Aug. 30, succeeding Robert Lansing, appointed Secretary of State; he was confirmed on Dec. 17.

Solicitor.—Cone Johnson, Tex. $5,000.

Foreign Trade Advisers.—William B. Fleming; Charles A. Holder. $4,500.

Bureau of Accounts.—Chief, William McNeir. $2.300.

Bureau of Appointments.—Chief, M. M. Shand, N. J. $2,100.

Bureau of Citizenship.—Chief, Richard W. Flournoy, Jr., Md. $2,100.

Consular Bureau.—Chief, Herbert C. Hengstler, Ohio. $2,250.

Diplomatic Bureau.—Chief, Sydney Y. Smith, D. C. $2.250.

Bureau of Indexes and Archives.—Chief, John R. Buck, Me. $2,100.

Bureau of Rolls and Library.—Chief, John A. Tonner, O. $2,100.

Division of Latin-American Affairs.—Chief, J. Butler Wright. $4,500.

Mr. Wright was appointed in 1915, succeeding William Heimke.

Division of Mexican Affairs.—Chief, Leon J. Canova. $4,500.

This division was created in 1915.

Division of Far-Eastern Affairs.—Chief, Edward T. Williams. $4,500.

Division of Near-Eastern Affairs.—Asst. Chief, Albert H. Putney. $3,000.

Division of Western European Affairs.—Chief, William W. Smith.

This division was created in 1915.

Division of Information.—Chief, John H. James. $3,000.

Treasury Department

Secretary of the Treasury.—William Gibbs McAdoo, N. Y.

Charged with management of the national finances. He prepares plans for improvement of the revenue and support of the public credit; superintends collection of the revenue; grants warrants for all moneys paid from and into the Treasury; controls construction of public buildings; coinage and printing of money; and the administration of the life-saving, revenue cutter, and the public health service; *ex officio* a member of the Federal Reserve Board.

Assistant Secretaries.—Andrew J. Peters, Mass., in charge of customs; William P. Malburn, Col., in charge of fiscal bureaus; Byron R. Newton, N. Y., in charge of public buildings and miscellaneous. $5,000 each.

Supervising Architect.——— ———, $6,000. Charged with superintending the construction and repair of public buildings.

Oscar Wenderoth resigned as Supervising Architect on June 30. His successor has not been appointed.

Engraving and Printing.—Chief of Bureau, Joseph E. Ralph, Ill., $6,000. Produces all the securities and similar work of the Government printed from steel plates.

Secret Service.—Chief, William J. Flynn, New York. $4,000. Charged with detection of counterfeiting, and similar frauds on the Government.

Comptroller of the Treasury.—Walter W. Warwick, O. $6,000. Construes the laws relating to appropriations and methods of rendering and stating accounts.

Mr. Warwick was confirmed on Dec. 17, succeeding George E. Downey (Ind.), appointed a judge of the Court of Claims.

Treasurer of the United States.—John Burke, N. D. $8,000. Charged with the receipt and disbursement of all public moneys deposited in the Treasury and sub-treasuries and in national bank depositories.

Comptroller of the Currency.—John Skelton Williams, Va. $5,000. Has supervision of the national banks, their examination and reports; the preparation and issue of national bank circulation; the redemption and destruction of national bank notes. *Ex officio* a member of the Federal Reserve Board; and in this capacity draws a salary of $7,000 in addition to the salary of $5,000 attached to the office proper.

Internal Revenue. — Commissioner, William H. Osborn, N. C. $6,000. General supervision of the collection of all internal revenue taxes, including the income tax, and the enforcement of internal revenue laws.

The Mint.—Director, Robert W. Wooley, Va. $5,000. General supervision of the mints and assay offices.

Mr. Wooley, at the time of his appointment auditor for the Department of the Interior, was confirmed on March 3, succeeding George E. Roberts (Ia.), resigned.

Public Health Service.—Surgeon-General Rupert Blue. $6,000. Charged with the framing and enforcement of regulations for the prevention of the introduction and spread of contagious dis-

eases; supervision of the quarantine service of the United States, and of the marine hospitals.

Coast Guard.—Captain Commandant, Ellsworth P. Bertholf. $5,000.

The Coast Guard was established by Act of Congress of Jan. 28, 1915, which consolidated therein the existing Life-Saving Service and the Revenue-Cutter Service (see I, *American History*). Captain Bertholf, formerly Captain Commandant of the Revenue-Cutter Service, was confirmed on Dec. 17.

War Department

Secretary of War.—Lindley Miller Garrison, N. J.

Charged with supervision of national defense and expenditures for military purposes.

Assistant Secretary of War.—Henry S. Breckinridge, Ky. $5,000.

The General Staff.—Chief, Brig.-Gen. Hugh L. Scott. Charged with preparation of plans for the national defense, and the promotion of the efficiency of the Army.

The chiefs of the military bureaus are as follows:

Adjutant-General.—Brig.-Gen. Henry P. McCain. $8,000.

Inspector-General.—Brig.-Gen. E. A. Garlington. $6,000.

Judge-Advocate-General. — Brig.-Gen. E. H. Crowder. $6,000.

Quartermaster-General.—Major-Gen. J. B. Aleshire. $6,000.

Surgeon-General.—Major-Gen. William C. Gorgas. $6,000.

Chief of Engineers.—Brig.-Gen. Dan C. Kingman. $6,000.

Chief of Ordnance.—Brig.-Gen. William Crozier. $6,000.

Chief Signal Officer. — Brig.-Gen. George P. Scriven. $6,000.

Chief of Bureau of Insular Affairs.—Brig.-Gen. Frank McIntyre. $6,000.

Board of Engineers for Rivers and Harbors.—Col. William M. Black, president. A permanent body which investigates in their engineering and economic aspects all surveys and river and harbor improvements proposed by Congress.

Department of Justice

Attorney-General.—Thomas Watt Gregory, Tex.

Represents the United States in all legal matters.

Solicitor-General.—John William Davis, W. Va. $10,000. Charged with the business of the Government in the Supreme Court and in state courts.

Assistant to the Attorney-General.—George Carroll Todd, N. Y. $7,000. Charged with matters arising under the federal anti-trust and interstate commerce laws.

Assistant Attorneys-General. — Seven in number; salary $5,000 each.

Post Office Department

Postmaster-General.—Albert Sidney Burleson, Tex.

Has direction and management of the Post Office.

First Assistant Postmaster-General.—Daniel C. Roper, S. C. $5,000. Charged with postmasters' appointments; salaries and allowance; city delivery service.

Second Assistant Postmaster-General.—Otto Praeger, Tex. $5,000. Charged with railway adjustments, miscellaneous transportation, foreign mails, railway mail service, inspection, equipment.

Mr. Praeger was appointed in 1915, succeeding Joseph Stewart (Mo.), resigned.

Third Assistant Postmaster-General.—Alexander M. Dockery, Mo. $5,000. Charged with financial system, stamps, money orders, registered mails, classification of domestic mail matter, redemption, postal savings.

Fourth Assistant Postmaster-General.—James I. Blakslee, Pa. $5,000. Charged with rural mails, supplies, dead letters, post route maps.

Navy Department

Secretary of the Navy.—Josephus Daniels, N. C.

Charged with direction of the Navy and superintendence of construction, equipment, and employment of vessels of war.

Assistant Secretary.—Franklin D. Roosevelt, N. Y. $5,000.

General Board of the Navy.—The General Board is advisory to the Secretary of the Navy, and is composed of the following officers:

Admiral of the Navy, George Dewey, president; Rear-Adm., A. M. Knight, president Naval War College; Rear-Adm. Charles J. Badger; Major-Gen. George Barnett, U. S. Marine Corps; Rear-Adm. W. S. Benson, Chief of Naval Operations; Capt. James H. Oliver; Capt. H. S. Knapp; Capt. C. F. Hughes; Capt. Spencer S. Wood; Capt. L. H. Chandler; Capt. W. L. Rodgers; Commander H. J. Ziegenmeier, secretary.

Office of Naval Operations.—Chief, Rear-Adm. William S. Benson. $8,000. Charged with the operations of the fleet and with the preparation and readiness of plans for its use in war.

This office was created by the Naval Appropriation Act of March 3, 1915 (see XII, *The Navy*).

Bureau of Yards and Docks.—Chief, Civil Engineer H. R. Stanford. $6,000. Charged with the construction and maintenance of docks and naval buildings.

Bureau of Navigation.—Chief, Rear-Adm. Victor Blue. $6,000. Charged with the education and supervision of line officers and of enlisted men.

Bureau of Ordnance.—Chief, Rear-Adm. Joseph Strauss. $8,000. Charged with supervision of the Torpedo Station, magazines on shore, and with the manu-

facture of explosives, arms and equipment.

Bureau of Construction and Repair.—Chief Constructor, David W. Taylor. $6,000. Charged with the design, construction, care, and repair of ships.

Bureau of Steam Engineering.—Engineer-in-Chief, Rear-Adm. Robert S. Griffin. $6,000. Charged with designing, building and repairing steam machinery for naval ships.

Bureau of Supplies and Accounts.—Paymaster-Gen. Samuel McGowan. $6,000. Charged with the supply of funds for disbursing officers, and the purchase of all naval supplies.

Bureau of Medicine and Surgery.—Surgeon-General, William C. Braisted. $6,000. Control of naval hospitals and hospital ships.

Judge-Advocate-General.—Capt. Ridley McLean. $5,000. Charged with supervision of all legal aspects of the Navy Department. Solicitor, Graham Egerton. $4,000.

Marine Corps.—Commandant, Major-Gen. George Barnett. $8,000.

Department of the Interior

Secretary of the Interior.—Franklin Knight Lane, Cal.

Charged with patents, pensions, public lands and parks, education, Indian affairs, geological surveys, reclamation of arid lands, and mines.

First Assistant Secretary.—Andrieus A. Jones, N. M. $6,000.

General Land Office.—Commissioner, Clay Tallman, Nev., $5,000. Charged with the survey, management and disposition of the public lands.

Patent Office.—Commissioner, Thomas Ewing, N. Y. $5,000. Administration of the patent laws, and supervision of the registration of trade-marks.

Pension Office.—Commissioner, Gaylord M. Saltzgaber, Ohio. $5,000. Supervision of adjudication of claims arising under laws granting Army or Navy service pensions.

Bureau of Indian Affairs.—Commissioner, Cato Sells, Tex. $5,000. Has charge of the Indian tribes of the United States (exclusive of Alaska).

Bureau of Education.—Commissioner, Philander P. Claxton, Tenn. $5,000. Collects statistics and general information regarding education; has charge of the schools for native Alaskan children; and administers the endowment fund for colleges of agriculture and mechanic arts.

Geological Survey.—Director, George Otis Smith, Me. $6,000. Charged with classification of the public lands and examination of the geologic structure, mineral resources, and the mineral products of the national domain.

Reclamation Service.—Director and Chief Engineer, Arthur P. Davis, $7,500. Charged with the survey, construction, and operation of the reclamation and irrigation works in arid states, authorized by the act of June 17, 1902.

Mr. Davis, formerly Chief Engineer, was appointed Director and Chief Engineer in 1915, succeeding Frederick H. Newell, resigned.

Bureau of Mines.—Director, Vannoy H. Manning, Miss. $6,000. To promote the mining industry of the United States, foster the safety of miners, and give attention to the treatment of ores and the use of explosives.

Mr. Manning was confirmed on Dec. 17, succeeding Joseph H. Holmes (N. C.), deceased.

Department of Agriculture

Secretary of Agriculture.—David Franklin Houston, Mo.

Exercises supervision over agricultural industry, experiment stations, quarantine stations for imported cattle, inspection of foods and drugs, national forest reserves, and interstate game laws.

Assistant Secretary.—Carl Vrooman, Ill. $5,000.

Weather Bureau.—Chief, Charles F. Marvin, D. C. $6,000. Charged with forecasting of weather for the benefit of agriculture, commerce and navigation.

Bureau of Animal Industry.—Chief A. D. Melvin, Ill. $5,000. Conducts inspection of animals and meat food products; investigates communicable diseases and their prevention, and the breeding and feeding of animals.

Bureau of Plant Industry.—Chief, William A. Taylor. $5,000. Charged with the improvement of crops by breeding and selection, and the introduction of new plants and seeds to different parts of the United States.

Forest Service.—Chief, Henry S. Graves. $5,000. Charged with the administration of the national forests, the investigation of forest problems and encouragement of protecting growing timber.

Bureau of Chemistry.—Chemist and Chief, Carl L. Alsberg. $5,000. Charged with the analysis of agricultural products and fertilizers, and the investigation of the composition and adulteration of foods and drugs.

Bureau of Soils.—Chief, Milton Whitney, Md. $3,500. Charged with investigating soils in their relations to climate and organic life.

Bureau of Entomology.—Chief, L. O. Howard, N. Y. $4,000. Charged with dissemination of information regarding injurious insects affecting forests, crops and fruits, and means of their elimination.

Bureau of Biological Survey.—Chief, Henry W. Henshaw, Mass. $3,000. Investigates the economic relations of animal life. Charged with enforcing the bird and game laws.

Bureau of Crop Estimates.—Chief, Leon M. Estabrook. $3,000. Collects and collates agricultural statistics and issues crop reports and forecasts. This bureau was called the Bureau of Statistics until 1914.

States Relations Service.—Director, A. C. True, Conn. $4,500. Charged with the supervision and promotion of agricul-

tural education and the maintenance of agricultural experiment stations.

This Service was created by the Agricultural Appropriation Act of March 4, 1915 (see XVII, *Agriculture*). Mr. True was formerly Chief of the Office of Experiment Stations, now a part of the States Relations Service.

Office of Public Roads and Rural Engineering.—Director, Logan W. Page, Mass. $4,500. Charged with investigating road making, road maintenance and road materials, the conduct of irrigation and drainage investigations, and the study of other rural engineering problems.

This Office comprises the Office of Public Roads and certain divisions of the Office of Experiment Stations transferred by the Agricultural Appropriation Act of March 4, 1915 (see XVII, *Agriculture*).

Office of Markets and Rural Organization.—Chief, Charles J. Brand. $3,000. Charged with the conduct of investigations of rural economics and coöperative organization.

Department of Commerce

Secretary of Commerce.—William Cox Redfield, N. Y.

Charged with promoting commerce, mining, manufacturing, shipping, fisheries, and transportation.

Assistant Secretary.—Edwin F. Sweet, Mich. $5,000.

Bureau of Corporations.—This Bureau was abolished in 1915, its organization and functions being absorbed by the Federal Trade Commission.

Bureau of Foreign and Domestic Commerce.—Chief, Edward Ewing Pratt, N. Y. $4,000. Charged with the collection and publication of statistics of foreign and domestic commerce, the development of manufactures and markets therefor, by the publication of information, and the investigation of matters affecting the commercial interest of the United States.

Bureau of Lighthouses.—Commissioner, George R. Putnam, Ia. $5,000. Charged with the administrative duties relating to lighthouses and protective signals.

Steamboat Inspection Service.—Supervising Inspector-General, George Uhler, Penn. $4,000. Charged with the inspection of vessels, the licensing of officers, and the administration of laws relating to steam vessels and their officers.

The Census Office.—Director, Samuel L. Rogers, N. C. $7,000 during decennial census period, $6,000 regular salary. The duty of the Census Office is to take, compile and publish the decennial census of the United States; the quinquennial census of agriculture and manufactures; the deaths in registration areas; the statistics of cotton ginned, and of cotton consumed; the annual statistics of cities; and to make such other statistical investigations as Congress may order.

Mr. Rogers was confirmed on March 3, succeeding William J. Harris, appointed a member of the Federal Trade Commission.

Coast and Geodetic Survey.—Superintendent, E. Lester Jones, Va. $6,000. Charged with survey of coasts under the jurisdiction of the United States, and publication of charts covering these coasts.

Mr. Jones was confirmed on Dec. 16, succeeding Otto H. Tittmann (Mo.), resigned.

Bureau of Fisheries.—Commissioner, Hugh M. Smith, D. C. $6,000. Charged with the propagation of useful food fishes, investigation of deep sea fishing grounds, and care of the Alaska salmon fisheries and the Pribilof Islands seals.

Bureau of Navigation.—Commissioner, Eugene T. Chamberlain, N. Y. $4,000. Charged with superintendence of the commercial marine, issue of licenses, and collection of tonnage taxes.

Bureau of Standards.—Director, Samuel W. Stratton, Ill. $6,000. Charged with comparing and testing standards used in scientific investigations, commerce and educational institutions, with standards adopted or recognized by the Government.

Department of Labor

Secretary of Labor.—William Bauchop Wilson, Pa.

Charged with the duty of fostering, promoting and developing the welfare of the wage earners of the United States.

Assistant Secretary.—Louis F. Post. $5,000.

Bureau of Immigration.—Commissioner-General, Anthony Caminetti, Cal. $5,000. Charged with administration of immigration laws.

Bureau of Naturalization.—Commissioner, Richard K. Campbell. $5,000. Charged with administration of the naturalization laws.

Bureau of Labor Statistics.—Commissioner, Royal Meeker, N. J. $5,000. Charged with the duty of acquiring and diffusing information concerning labor in its relations to capital and means of promoting prosperity among the laboring classes.

Children's Bureau.—Chief, Julia C. Lathrop, Ill. $5,000. Charged with the investigation of all matters pertaining to the welfare of children and child life.

Independent Bureaus and Institutions

Interstate Commerce Commission.—Seven members, each receiving an annual salary of $10,000; appointed for terms of seven years, one retiring each year. Charles C. McChord, Ky., chairman; James S. Harlan, Ill.; Edgar E. Clark, Ia.; Judson C. Clements, Ga.; Henry C. Hall, Col.; Balthasar H. Meyer, Wis.; Winthrop M. Daniels, N. J.; Secretary, George B. McGinty, salary, $5,000.

Mr. Hall, whose term expired on Dec. 31, 1914, was renominated for a full

term of seven years and confirmed on Jan. 26. Mr. McChord, whose term expired on Dec. 31, 1915, was renominated for another term and confirmed on Dec. 16. Mr. McChord succeeded Mr. Harlan as Chairman of the Commission on March 6.

Federal Reserve Board.—Created by the Federal Reserve Act of Dec. 23, 1913, for the supervision of the Federal reserve system. Composed of five appointive members and the Secretary of the Treasury and the Comptroller of the Currency *ex officio*. The members of the board, with the terms for which the appointive members were commissioned in 1914, are as follows: Charles S. Hamlin, Mass., governor (two years); Frederick A. Delano, Ill., vice-governor (six years); Paul M. Warburg, N. Y. (four years); William P. G. Harding, Ala. (eight years); Adolph C. Miller, Cal. (ten years); William G. McAdoo, Secretary of the Treasury, *ex officio;* John Skelton Williams, Comptroller of the Currency, *ex officio*. The salary of the appointed members is $10,000 per annum.

Federal Trade Commission.—Created by the Federal Trade Commission Act of Sept. 26, 1914. Endowed by that Act and by the Clayton Anti-trust Act of Oct. 15, 1914, with powers of investigation and publicity over corporations and certain *quasi* judicial functions in the enforcement of anti-trust laws. Composed of five appointive members, not more than three of whom may be of the same political party. The members of the board, with the terms for which they have been appointed, are as follows: Joseph E. Davies, Wis., chairman (seven years); Edward N. Hurley, Ill., vice-chairman (six years); William J. Harris, Ga. (five years); Will H. Parry, Wash. (four years); George Rublee, N. H. (three years). The salary is $10,000 per annum. Mr. Davies, Mr. Hurley, Mr. Harris and Mr. Parry were confirmed on March 3. Mr. Rublee failed of confirmation in the final session of the Sixty-third Congress, but was given a recess appointment and renominated by President Wilson to the Sixty-fourth Congress on Dec. 10.

Civil Service Commission.—Commissioners, John A. McIlhenny, La., president, $4,500; Charles M. Galloway, S. C., $4,000; Hermon W. Craven, Wash., $4,000. Charged with the conduct of competitive examinations of applicants for the classified civil service.

Government Printing Office.—Public Printer, Cornelius Ford, N. J. $5,500. Charged with the printing, press work, and binding of all Government publications of every description.

The Library of Congress.—Librarian, Herbert Putnam, Mass. $6,000. Primarily a reference library, composed of numerous collections, presented and bought. It is the third largest collection in the world. Under the jurisdiction of Congress.

Commission of Fine Arts.—Established 1910, to pass upon sites and plans for future buildings, monuments, etc., in the District of Columbia. No compensation, but actual expenses allowed. Chairman, Charles Moore, Mich.; vice-chairman, Frederick Law Olmstead, Mass., landscape architect; Thomas Hastings, N. Y., architect; Cass Gilbert, N. Y., architect; Edwin H. Blashfield, N. Y., painter; Pierce Anderson, Ill.; Herbert Adams, N. Y.; secretary, Col. Wm. W. Harts.

Smithsonian Institution.—Secretary, Charles D. Walcott. $7,500. Established 1846, under the terms of James Smithson's will, for the "increase and diffusion of knowledge among men." The former is accomplished by promoting original scientific research, and the latter by publication and lectures. Managed by a Board of Regents. It cooperates with the Government and national scientific bodies.

National Museum.—Under the same management. Charged with preserving and utilizing objects of art and ethnological, geological and mineralogical collections belonging to the United States.

Pan-American Union. — Director-General, John Barrett, Ore. $5,000. Established for the purpose of developing closer relations of commerce and friendship between the twenty-one republics of the Western Hemisphere.

THE SIXTY-THIRD CONGRESS

The Senate.—A complete list of the members of the Senate in the Sixty-third Congress at the end of 1913 was given in the YEAR BOOK for 1913 (p. 168), and the changes occurring in 1914 in the issue for 1914 (p. 174). No further changes occurred during the final session. The representation of parties during the final session was: Democrats, 53; Republicans, 42; Progressive, 1.

A complete list of the chairmen of the Senate committees in the Sixty-third Congress and the full membership of the more important committees were given in the YEAR BOOK for 1913 (p. 169).

House of Representatives.—A complete list of members of the House of Representatives in the Sixty-third Congress was given in the YEAR BOOK for 1913 (p. 171), and the changes occurring in 1914 in the issue for 1914 (p. 174). No further changes occurred during the final session. Vacancies existed during the final session in the representation of Illinois (1), Massachusetts (2), New York (2) and Ohio (1). The representation of parties was: Democrats,

286; Republicans, 122; Progressive Republicans, 5; Progressives, 15; Independent, 1; vacancies, 6; total, 435.

A complete list of the chairmen of the House committees in the Sixty-third Congress and the full membership of the more important committees were given in the YEAR BOOK for 1913 (p. 173).

Third Session.—The third and final session of the Sixty-Third Congress opened on Dec. 7, 1914, and ended on March 4, 1915. The total number of bills and resolutions introduced during the third session was 3,568, bringing the total number for the Sixty-third Congress to 31,479, of which 7,751 were Senate bills and 21,616 House bills. The principal bills of public interest enacted during the final session were the following, the dates being those of the President's approval:

S. 136. To promote the welfare of American seamen in the merchant marine of the United States; to abolish arrest and imprisonment as a penalty for desertion and to secure the abrogation of treaty provisions in relation thereto; and to promote safety at sea. Public, No. 302, March 4.

S. 2335. To provide for the register and enrollment of vessels built in foreign countries when such vessels have been wrecked on the coasts of the United States or her possessions or adjacent waters and salved by American citizens and repaired in American shipyards. Public, No. 254, Feb. 24.

S. 2337. To create the Coast Guard by combining therein the existing Life-Saving Service and Revenue-Cutter Service. Public, No. 239, Jan. 28.

S. 2651. Providing for the purchase and disposal of certain lands containing the minerals kaolin, kaolinite, fuller's earth, china clay, and ball clay in Tripp County, formerly a part of the Rosebud Indian Reservation in South Dakota. Public, No. 229, Jan. 11.

S. 2824. To amend an act entitled "An act to provide for the adjudication and payment of claims arising from Indian depredations," approved March 3, 1891. Public, No. 228, Jan. 11.

S. 3362. To authorize the Secretary of Commerce, through the Coast and Geodetic Survey and the Bureau of Fisheries, to make a survey of natural oyster beds, bars and rocks, and barren bottoms contiguous thereto in waters along the coast of and within the State of Texas. Public, No. 324.

S. 4522. To amend an act entitled "An act to amend an act entitled 'An act to regulate commerce,' approved Feb. 4, 1887, and all acts amendatory thereof, and to enlarge the powers of the Interstate Commerce Commission," approved June 29, 1906. Public, No. 325, March 4.

S. 5614. For the improvement of the foreign service. Public, No. 242, Feb. 5.

S. 6039. For the coinage of certain gold and silver coins in commemoration of the Panama-Pacific International Exposition, and for other purposes. Public, No. 233, Jan. 16.

S. 6106. Validating locations of deposits of phosphate rock heretofore made in good faith under the placer-mining laws of the United States. Public, No. 230, Jan. 11.

S. 6309. To establish the Rocky Mountain National Park in the State of Colorado, and for other purposes. Public, No. 238, Jan. 26.

S. 6631. To regulate the practice of pharmacy and the sale of poison in the consular districts of the United States in China. Public, No. 262, March 3.

S. 7515. To reserve lands to the Territory of Alaska for educational uses, and for other purposes. Public, No. 330, March 4.

H. R. 4899. To fix the standard barrel for fruits, vegetables, and other dry commodities. Public, No. 307, March 4.

H. R. 6282. To provide for the registration of, with collectors of internal revenue, and to impose a special tax upon all persons who produce, import, manufacture, compound, deal in, dispense, sell, distribute, or give away opium or coca leaves, their salts, derivatives, or preparations, and for other purposes. Public, No. 223, Dec. 17.

H. R. 12674. To provide for the allowance of drawback of tax on articles shipped to the island of Porto Rico or to the Philippine Islands. Public, No. 313, March 4.

H. R. 15038. Proposing an amendment to the Federal Reserve Act relative to acceptances, and for other purposes. Public, No. 281, March 3.

H. R. 15220. To amend sections 4888 and 4889 of the Revised Statutes, relating to patents. Public, No. 282, March 3.

H. R. 15869. To provide for the establishment and maintenance of mining experiment and mine safety stations for making investigations and disseminating information among employees in mining, quarrying, metallurgical, and other mineral industries, and for other purposes. Public, No. 283, March 3.

H. R. 16510. To provide for recognizing the services of certain officers of the Army, Navy, and Public Health Service for their services in connection with the construction of the Panama Canal, to extend to certain of such officers the thanks of Congress, and for other purposes. Public, No. 316, March 4.

H. R. 17869. Providing for the appointment of an additional district judge for the southern district of the State of Georgia. Public, No. 284, March 3.

H. R. 17894. To amend an act entitled "An act to promote the safety of employees and travelers upon railroads by compelling common carriers engaged in interstate commerce to equip their locomotives with safe and suitable boilers and appurtenances thereto," ap-

proved Feb. 17, 1911. Public, No. 318, March 4.

H. R. 18685. To repeal penalties on foreign-built vessels owned by Americans. Public, No. 320, March 4.

H. R. 18686. To provide for provisional certificates of registry of vessels abroad, and for other purposes. Public, No. 321, March 4.

H. R. 20107. To amend sections 4421, 4422, 4423, 4424 and 4498 of the Revised Statutes of the United States, and section 12 of the act of May 28, 1908, relating to certificates of inspection of steam vessels. Public, No. 333, March 4.

H. R. 20894. To provide for the appointment of a district judge, district attorney, and marshal for the western district of South Carolina, and for other purposes. Public, No. 288, March 3.

H. J. Res. 439. To empower the President to better enforce and maintain the neutrality of the United States. Public Res., No. 72, March 4.

The total appropriations of Congress for the five years 1912-16 are given in the following table (see also XIV, *Public Finance*):

ANNUAL APPROPRIATIONS OF CONGRESS, 1912–16

APPROPRIATED	3d session 61st Congress, 1912	1st and 2d sessions, 62d Congress, 1913	3d session 62d Congress, 1914	1st and 2d sessions, 63d Congress, 1915	3d session, 63d Congress, 1916
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*
To supply deficiencies	10,028,526.84	8,155,587.25	27,080,512.29	24,028,999.41	11,399,025.69
Legislative, executive, and judicial expenses	35,378,149.85	34,245,356.75	35,172,434.50	37,630,781.37	36,904,799.75
Sundry civil expenses	135,241,935.34	102,538,934.40	106,749,532.01	103,080,275.74	122,940,750.79
The army	93,374,755.97	90,958,712.98	94,266,145.51	101,019,212.50	101,959,195.87
The naval service	126,405,509.24	123,151,538.76	140,718,434.53	144,868,716.61	149,661,864.88
The Indian service	8,842,136.37	8,920,970.66	9,486,819.67	9,771,902.76	9,325,455.00
Rivers and harbors	30,883,419.00	40,559,620.50	51,118,889.00	26,989,000.00	33,982,000.00
Forts and fortifications	5,473,707.00	4,036,235.00	5,218,250.00	5,627,700.00	6,060,216.90
Military Academy	1,163,424.07	1,064,668.26	1,099,734.87	997,899.54	1,069,813.37
Postal deficiencies[1]	Indefinite	Indefinite	Indefinite	Indefinite	Indefinite
Pensions	153,682,000.00	165,146,145.84	180,300,000.00	169,150,000.00	164,100,000.00
Consular and diplomatic service	3,988,516.41	3,638,047.41	3,730,642.66	4,309,856.66	4,040,446.66
Department of Agriculture	16,900,016.00	16,648,168.00	17,986,945.00	19,865,832.00	22,971,782.00
District of Columbia	12,056,786.50	10,675,833.50	11,383,739.00	12,171,457.28	11,859,584.45
Reclamation fund	.....	.....	.....	.....	.....
Miscellaneous	1,130,678.81	7,642,359.03	445,197.22	14,985,991.29	2,402,923.34
Totals by session acts (exclusive of the Postal Act)	634,549,561.40	617,382,178.34	684,757 276.26	674,497,625.16	678,677,858.70
Estimated permanent annual appropriations (exclusive of Sinking Fund)	68,575,924.12	72,556,424.12	66,840,664.12	70,479,407.00	60,844,207.00
	703,125,485.52	689,938,602.46	751,597,940.38	744,977,032.16	739,522,065.70
For the postal service.[2]	258,634,463.00	269,704,599.00	285,376,271.00	313,364,667.00	313,364,667.00
For deficiencies in the postal service.[2]	.....	1,056,789.17	942,854.26	3,413,219.96	880,971.39
Grand totals	961,759,948.52	960,699,990.63	1,037,917,065.64	1,061,754,919.12	1,053,767,704.09

[1] Grants from the Treasury. [2] Payable from the postal revenues.

THE SIXTY-FOURTH CONGRESS

The Senate.—The terms of 32 Senators expired on March 4, 1915. Their successors were elected on Nov. 3, 1914, the first general election of Senators under the Seventeenth Amendment. The following is a complete list of the members of the Senate in the Sixty-fourth Congress:

THE SENATE

Democrats in Roman, 56; Republicans in *italic*, 40; whole number, 96. Salary, $7,500 per year and mileage of 20 cents per mile each way. Those marked * reëlected in 1914. Terms expire in years indicated.

Alabama

1919. J. H. Bankhead
1921. Oscar W. Underwood

Arizona

1917. Henry F. Ashurst
1921. Marcus A. Smith *

Arkansas

1919. Jos. T. Robinson
1921. James P. Clarke *

California

1917. *John D. Works*
1921. James D. Phelan

Colorado

1919. John F. Shafroth
1921. Chas. S. Thomas *

Connecticut

1917. *George P. McLean*
1921. *Frank B. Brandegee **

Delaware

1917. *Henry A. du Pont*
1919. Willard Saulsbury

Florida

1917. Nathan P. Bryan
1921. Duncan U. Fletcher *

Georgia

1919. Thos. W. Hardwick
1921. Hoke Smith *

Idaho

1919. *Wm. E. Borah*
1921. *James H. Brady **

Illinois

1919. J. Hamilton Lewis
1921. *Lawrence Y. Sherman **

Indiana

1917. John W. Kern
1921. Ben. F. Shively *

Iowa

1919. *Wm. S. Kenyon*
1921. *A. B. Cummins **

Kansas

1919. Wm. H. Thompson
1921. *Charles . Curtis*

Kentucky

1919. Ollie M. James
1921. J. C. W. Beckham

Louisiana

1919. Jos. E. Ransdell
1921. Robt. F. Broussard

Maine

1917. Charles F. Johnson
1919. *Edwin C. Burleigh*

Maryland

1917. Blair Lee
1921. John W. Smith *

Massachusetts

1917. *Henry Cabot Lodge*
1919. *John W. Weeks*

Michigan

1917. *Chas. E. Townsend*
1919. *Wm. Alden Smith*

Minnesota

1917. *Moses Edwin Clapp*
1919. *Knute Nelson*

Mississippi

1917. John S. Williams
1919. Jas. K. Vardaman

Missouri

1917. James A. Reed
1921. William J. Stone *

Montana

1917. Henry L. Myers
1919. Thos. J. Walsh

Nebraska

1917. G. M. Hitchcock
1919. *Geo. W. Norris*

Nevada

1917. Key Pittman
1921. F. G. Newlands *

New Hampshire

1919. Henry F. Hollis
1921. *Jacob H. Gallinger**

New Jersey

1917. James E. Martine
1919. Wm. Hughes

New Mexico

1917. *Thomas B. Catron*
1919. *Albert B. Fall*

New York

1917. Jas. A. O'Gorman
1921. *Jas. W. Wadsworth*

North Carolina

1919. F. M. Simmons
1921. Lee S. Overman *

North Dakota

1917. *P. J. McCumber*
1921. *Asle J. Gronna **

Ohio

1917. Atlee Pomerene
1921. *Warren G. Harding*

Oklahoma

1919. Robert L. Owen
1921. Thomas P. Gore *

Oregon

1919. Harry Lane
1921. G. E. Chamberlain*

Pennsylvania

1917. *George T. Oliver*
1921. *Boies Penrose **

Rhode Island

1917. *Henry F. Lippitt*
1919. *LeBaron B. Colt*

South Carolina

1919. B. R. Tillman
1921. Ellison D. Smith *

South Dakota

1919. *Thomas Sterling*
1921. Ed. S. Johnson

Tennessee		Vermont		West Virginia	
1917.	Luke Lea	1917.	*Carroll S. Page*	1917.	Wm. E. Chilton
1919.	John K. Shields	1921.	*Wm. P. Dillingham* *	1919.	*Nathan Goff*
Texas		**Virginia**		**Wisconsin**	
1917.	Chas. A. Culberson	1917.	Claude A. Swanson	1917.	*R. M. La Follette*
1919.	Morris Sheppard	1919.	Thomas S. Martin	1921.	Paul O. Husting
Utah		**Washington**		**Wyoming**	
1917.	*Geo. Sutherland*	1917.	*Miles Poindexter*	1917.	*Clarence D. Clark*
1921.	*Reed Smoot* *	1921.	*Wesley L. Jones* *	1919.	*F. E. Warren*

Committees of the Senate.—The following is a list of the Senate Committees and their chairmen, as organized at the opening of Congress in December:

Additional Accommodations for the Library of Congress.—Boies Penrose, Pa.
Agriculture and Forestry.—T. P. Gore, Okla.
Appropriations.—T. S. Martin, Va.
Audit and Control the Contingent Expenses of the Senate.—Luke Lea, Tenn.
Banking and Currency.—R. L. Owen, Okla.
Canadian Relations.—J. K. Shields, Tenn.
The Census.—W. E. Chilton, West Va.
Civil Service and Retrenchment.—Atlee Pomerene, Ohio.
Claims.—N. B. Bryan, Fla.
Coast and Insular Survey.—Willard Saulsbury, Del.
Coast Defense.—Blair Lee, Md.
Commerce.—J. P. Clarke, Ark.
Conservation of National Resources.—J. K. Vardaman, Miss.
Corporations Organized in the District of Columbia.—R. M. La Follette, Wis.
Cuban Relations.—Oscar W. Underwood, Ala.
Disposition of Useless Papers in the Executive Departments.—W. L. Jones, Wash.
District of Columbia.—J. W. Smith, Md.
Education and Labor.—Hoke Smith, Ga.
Engrossed Bills.—F. E. Warren, Wyo.
Enrolled Bills.—H. F. Hollis, N. H.
Examine the Several Branches of the Civil Service.—W. A. Smith, Mich.
Expenditures in the Department of Agriculture.—Morris Sheppard, Tex.
Expenditures in the Department of Commerce.—W. H. Thompson, Kan.
Expenditures in the Interior Department.—Reed Smoot, Utah.
Expenditures in the Department of Justice.—George Sutherland, Utah.
Expenditures in the Department of Labor.—J. C. W. Beckham, Ky.
Expenditures in the Navy Department.—William Hughes, N. J.
Expenditures in the Post Office Department.—T. W. Hardwick, Ga.
Expenditures in the Department of State.—J. H. Lewis, Ill.
Expenditures in the Treasury Department.—J. T. Robinson, Ark.
Expenditures in the War Department.—Henry A. du Pont, Del.
Finance.—F. M. Simmons, N. C.
Fisheries.—Chas. F. Johnson, Me.
Five Civilized Tribes of Indians.—Knute Nelson, Minn.
Foreign Relations.—Wm. J. Stone, Mo.
Forest Reservations and the Protection of Game.—Harry Lane, Ore.
Geological Survey.—C. D. Clark, Wyo.
Immigration.—E. D. Smith, S. C.
Indian Affairs.—H. F. Ashurst, Ariz.
Indian Depredations.—W. E. Borah, Idaho.
Industrial Expositions.—James E. Martine, N. J.
Interoceanic Canals.—J. A. O'Gorman, N. Y.
Interstate Commerce.—F. G. Newlands, Nev.
Investigate Trespassers upon Indian Lands.—P. O. Husting, Wis.
Irrigation and Reclamation of Arid Lands.—M. A. Smith, Ariz.
Judiciary.—C. A. Culberson, Tex.
Library.—J. S. Williams, Miss.
Manufactures.—J. A. Reed, Mo.
Military Affairs.—G. E. Chamberlain, Ore.
Mines and Mining.—T. J. Walsh, Mont.
Mississippi River and Its Tributaries.—A. B. Cummins, Iowa.
National Banks.—F. R. Broussard, La.
Naval Affairs.—B. R. Tillman, S. C.
Pacific Islands and Porto Rico.—J. F. Shafroth, Colo.
Pacific Railroads.—F. B. Brandegee, Conn.
Patents.—O. M. James, Ky.
Pensions.—B. F. Shively, Ind.
Philippines.—G. M. Hitchcock, Neb.
Post Offices and Post Roads.—J. H. Bankhead, Ala.
Printing.—D. U. Fletcher, Fla.
Private Land Claims.—H. C. Lodge, Mass.
Privileges and Elections.—J. W. Kern, Ind.
Public Buildings and Grounds.—C. A. Swanson, Va.
Public Health and National Quarantine.—J. E. Ransdell, La.
Public Lands.—H. L. Myers, Mont.
Railroads.—J. D. Phelan, Cal.
Revolutionary Claims.—E. S. Johnson, S. D.
Rules.—L. S. Overman, N. C.
Standards, Weights and Measures.—M. E. Clapp, Minn.
Territories.—Key Pittman, Nev.
Transportation Routes to the Seaboard.—P. J. McCumber, N. D.
Transportation and Sale of Meat Products.—Carroll S. Page, Vt.
University of the United States.—W. P. Dillingham, Vt.
Woman Suffrage.—C. S. Thomas, Colo.

House of Representatives.—Six members elected to the House of Representatives on Nov. 3, 1914, died before the assembly of the Sixty-fourth Congress: Edwin A. Merritt, Jr. (Rep.), 31st New York, Dec. 4, 1914; Sereno E. Payne (Rep.), 36th New York, Dec. 10, 1914; W. M. Brown (Rep.), 24th Pennsylvania, Jan. 31; J. A. Goulden (Dem.), 23d New York, May 3; J. T. Johnson (Dem.), 4th South Carolina; and S. A. Witherspoon (Dem.), 5th Mississippi, Nov. 24; successors to all except the last have been elected. The following is a complete list of the members of the House of Representatives in the Sixty-fourth Congress:

HOUSE OF REPRESENTATIVES

Democrats in Roman, 228; Republicans in *Italic*, 197; Progressives in SMALL CAPS, 3; Progressive Republicans in *Italic* with §, 2; Progressive-Protectionist in SMALL CAPS with ¶, 1; Independent in CAPS, 1; Socialist in *ITALIC CAPS*, 1; Prohibitionist in Roman with †, 1; vacancy, 1; whole number 435. Those marked * served in the 63d Congress. Salary, $7,500 per annum and mileage of 20 cents per mile each way.

ALABAMA

1. O. L. Gray
2. S. H. Dent *
3. H. B. Steagall
4. F. L. Blackmon *
5. J. T. Heflin *
6. W. B. Oliver
7. J. L. Burnett *
8. E. B. Almon
9. George Huddleston

AT LARGE—J. W. Abercrombie *

ARIZONA

AT LARGE—Carl Hayden *

ARKANSAS

1. T. H. Caraway *
2. W. A. Oldfield *
3. J. N. Tillman
4. O. T. Wingo
5. H. M. Jacoway *
6. S. M. Taylor *
7. W. S. Goodwin *

CALIFORNIA

1. WILLIAM KENT *
2. J. E. Raker *
3. *C. F. Curry* *
4. *Julius Kahn* *
5. J. I. NOLAN *
6. J. A. ELSTON
7. D. S. Church *
8. *E. A. Hayes* *
9. C. H. Randall †
10. *W. D. Stephens* §*
11. William Kettner *

COLORADO

1. B. C. Hilliard
2. *Charles B. Timberlake*
3. Edward Keating *
4. Edward T. Taylor *

CONNECTICUT

1. *P. D. Oakey*
2. *R. P. Freeman*
3. *J. Q. Tilson*
4. *E. J. Hill*
5. *J. P. Glynn*

DELAWARE

AT LARGE—*T. W. Miller*

FLORIDA

1. S. M. Sparkman *
2. Frank Clark *
3. Emmett Wilson *
4. W. J. Sears

GEORGIA

1. C. G. Edwards *
2. Frank Park *
3. C. R. Crisp *
4. W. C. Adamson *
5. W. S. Howard *
6. Jas. W. Wise
7. Gordon Lee *
8. S. J. Tribble *
9. Thomas M. Bell *
10. Carl Vinson
11. J. R. Walker *
12. D. M. Hughes *

IDAHO

AT LARGE—
Robert M. McCracken
A. T. Smith *

ILLINOIS

1. *M. B. Madden* *
2. *J. R. Mann* *
3. *W. W. Wilson*
4. J. T. McDermott *
5. A. J. Sabath *
6. James McAndrews *
7. Frank Buchanan *
8. Thomas Gallagher *
9. *F. A. Britten* *
10. *G. E. Foss*
11. *I. C. Copley* §*
12. *C. E. Fuller*
13. *J. C. McKenzie* *
14. C. H. Tavenner *
15. *E. J. King*
16. C. U. Stone *
17. *J. A. Sterling*
18. *J. G. Cannon*
19. *W. B. McKinley*
20. H. T. Rainey *
21. *L. E. Wheeler*
22. *W. A. Rodenberg*
23. M. D. Foster *
24. *T. S. Williams*
25. *E. E. Denison*

AT LARGE—*B. M. Chiperfield*
W. E. Williams*

INDIANA

1. Charles Lieb *
2. W. A. Cullop *
3. W. E. Cox *
4. Lincoln Dixon *
5. R. W. Moss *
6. F. H. Gray *
7. *Merrill Moores*
8. J. A. M. Adair *
9. M. A. Morrison *
10. *W. R. Wood*
11. G. W. Rauch *
12. Cyrus Cline *
13. H. A. Barnhart *

IOWA

1. *C. A. Kennedy* *
2. *H. E. Hull*
3. *B. E. Sweet*
4. *G. N. Haugen* *
5. *J. W. Good* *
6. *C. W. Ramseyer*
7. *C. C. Dowell*
8. *H. M. Towner* *
9. *W. R. Green* *
10. *F. P. Woods* *
11. T. J. Steele

KANSAS

1. *D. R. Anthony* *
2. Joseph Taggart *
3. *P. P. Campbell* *
4. *Dudley Doolittle* *
5. G. T. Helvering *
6. J. R. Connelly *
7. Jouett Shouse
8. W. A. Ayres

KENTUCKY

1. A. W. Barkley *
2. D. H. Kinchloe
3. R. Y. Thomas, Jr.*
4. Ben Johnson *
5. Swagar Sherley *
6. A. B. Rouse *
7. J. C. Cantrill *
8. Harvey Helm *
9. W. J. Fields *
10. *J. W. Langley* *
11. *Caleb Powers* *

LOUISIANA

1. Albert Estopinal *
2. H. G. Dupré *
3. W. P. MARTIN ¶

4. J. T. Watkins *
5. Riley Wilson
6. L. L. Morgan *
7. L. Lazaro *
8. J. B. Aswell *

MAINE

1. *A. C. Hinds* *
2. D. J. McGillicuddy *
3. *J. A. Peters* *
4. *F. E. Guernsey* *

MARYLAND

1. J. D. Price *
2. J. F. C. Talbott *
3. C. P. Coady *
4. J. C. Linthicum *
5. *S. E. Mudd*
6. D. J. Lewis *

MASSACHUSETTS

1. *A. T. Treadway* *
2. *F. H. Gillett* *
3. *C. D. Paige* *
4. *S. E. Winslow* *
5. *J. J. Rogers* *
6. *A. P. Gardner* *
7. M. F. Phelan *
8. *F. W. Dallinger*
9. *E. W. Roberts* *
10. P. T. Tague
11. *G. H. Tinkham*
12. J. A. Gallivan *
13. *W. H. Carter*
14. Richard Olney, 2d.
15. *W. S. Greene* *
16. *Joseph Walsh*

MICHIGAN

1. F. E. Doremus *
2. S. W. Beakes *
3. *J. M. C. Smith* *
4. *E. L. Hamilton* *
5. *C. E. Mapes* *
6. P. H. Kelley *
7. *L. C. Cramton* *
8. *J. W. Fordney* *
9. *J. C. McLaughlin* *
10. *G. A. Loud*
11. *F. D. Scott*
12. *W. F. James*
13. *C. A. Nichols*

MINNESOTA

1. *Sydney Anderson* *
2. *F. F. Ellsworth*
3. *C. R. Davis* *
4. C. C. Van Dyke
5. *G. R. Smith* *
6. *C. A. Lindbergh* *
7. *A. J. Volstead* *
8. *C. B. Miller* *
9. *Halvor Steenerson* *
10. THOMAS D. SCHALL

MISSISSIPPI

1. E. S. Candler *
2. H. D. Stephens *
3. B. G. Humphreys *
4. T. U. Sisson *
5. ——— ———
6. B. P. Harrison *
7. P. E. Quin *
8. J. W. Collier *

MISSOURI

1. J. T. Lloyd *
2. W. W. Rucker *
3. J. W. Alexander *
4. C. F. Booher *
5. W. P. Borland *
6. C. C. Dickinson *
7. C. W. Hamlin *
8. D. W. Shackleford *
9. Champ Clark *
10. *J. E. Meeker*
11. W. L. Igoe *
12. *L. C. Dyer*
13. W. L. Hensley *
14. J. J. Russell *
15. P. D. Decker *
16. T. L. Rubey *

MONTANA

AT LARGE—J. M. Evans *
Tom Stout *

NEBRASKA

1. *C. F. Reavis* *
2. C. O. Lobeck *
3. D. V. Stephens *
4. *C. H. Sloan* *
5. A. C. Shallenberger *
6. *M. P. Kinkaid* *

NEVADA

AT LARGE—*E. E. Roberts* *

NEW HAMPSHIRE

1. *C. A. Sulloway*
2. *E. H. Wason*

NEW JERSEY

1. *W. J. Browning* *
2. *Isaac Bacharach*
3. T. J. Scully *
4. *E. C. Hutchinson*
5. *J. H. Capstick*
6. A. C. Hart *
7. *D. H. Drukker* *
8. *E. W. Gray*
9. *R. W. Parker*
10. *Fred. R. Lehlback*
11. J. J. Eagan *
12. J. A. Hamill *

NEW MEXICO

AT LARGE—*B. C. Hernandez*

NEW YORK

1. *Fred. C. Hicks*
2. C. P. Caldwell
3. Jas. V. Flynn
4. H. H. Dale *
5. J. P. Maher *
6. *F. W. Rowe*
7. J. J. Fitzgerald *
8. D. J. Griffin *
9. *O. W. Swift*
10. *R. L. Haskell*
11. D. J. Riordan *
12. *MEYER LONDON*
13. G. W. Loft *
14. M. F. Farley
15. M. F. Conry *
16. Peter J. Dooling *
17. J. F. Carew *
18. T. G. Patten *
19. *W. M. Chandler* *
20. *Isaac Seigel*
21. Murray Hulbert
22. Henry Bruckner *
23. *Wm. S. Bennet*
24. W. R. Oglesby *
25. *J. W. Husted*
26. *Edmund Platt* *
27. *C. B. Ward*
28. *R. B. Sanford*
29. *J. S. Parker* *
30. *W. B. Charles*
31. *B. H. Snell*
32. *L. W. Mott* *
33. *H. P. Snyder*
34. *G. W. Fairchild* *
35. *W. W. Magee*
36. *N. J. Gould*
37. *H. H. Pratt*
38. *T. B. Dunn* *
39. *H. G. Danforth* *
40. *S. W. Dempsey*
41. C. B. Smith *
42. D. A. Driscoll *
43. *C. M. Hamilton* *

NORTH CAROLINA

1. J. H. Small *
2. Claude Kitchin *
3. George Hood
4. E. W. Pou *
5. C. M. Stedman *
6. H. L. Godwin *
7. R. N. Page *
8. R. L. Doughton *
9. E. Y. Webb *
10. *J. J. Britt*

NORTH DAKOTA

1. *H. T. Helgesen* *
2. *G. M. Young* *
3. *P. D. Norton* *

OHIO

1. *Nicholas Longworth*
2. A. G. Allen *
3. Warren Gard *
4. *J. E. Russell*
5. *N. E. Matthews*
6. *C. C. Kearns*
7. *S. D. Fess* *
8. J. A. Key *
9. I. R. Sherwood *
10. *R. M. Switzer* *
11. *Edwin D. Ricketts*
12. C. Brumbaugh *
13. A. W. Overmyer
14. *S. H. Williams*
15. *W. C. Mooney*
16. *R. C. McCulloch*
17. W. A. Ashbrook *
18. *D. A. Hollingsworth*
19. *J. G. Cooper*
20. William Gordon *
21. Robert Crosser *
22. *H. I. Emerson*

OKLAHOMA

1. J. S. Davenport *
2. W. W. Hastings
3. C. D. Carter *
4. W. H. Murray *
5. J. B. Thompson *
6. Scott Ferris *
7. J. V. McClintic
8. *D. T. Morgan* *

OREGON

1. *W. C. Hawley* *
2. *N. J. Sinnott* *
3. *C. N. McArthur*

PENNSYLVANIA

1. *W. S. Vare* *
2. *G. S. Graham* *
3. *J. H. Moore* *
4. *G. W. Edmonds* *
5. *P. E. Costello*
6. *G. P. Darrow*
7. *T. S. Butler* *
8. *H. W. Watson*
9. *W. W. Griest* *
10. *J. R. Farr* *
11. J. J. Casey *
12. *R. D. Heaton*
13. A. G. Dewalt
14. *L. T. McFadden*
15. *E. R. Kiess* *
16. J. V. Lesher *
17. *B. K. Focht*
18. *A. S. Kreider* *
19. W. W. Bailey *
20. *C. W. Beales*
21. *C. H. Rowland*
22. *A. L. Keister* *
23. *R. E. Hopwood*
24. *H. W. Temple*
25. Michael Liebel
26. H. J. Steele
27. *S. T. North*
28. *S. H. Miller*
29. *S. G. Porter* *
30. *W. H. Coleman*
31. *J. M. Morin* *
32. *A. J. Barchfeld* *

AT LARGE—*T. S. Crago*
M. H. Garland
D. F. Lafean
John R. K. Scott

RHODE ISLAND

1. G. F. O'Shaunessy *
2. *W. R. Stiness*
3. *Ambrose Kennedy* *

SOUTH CAROLINA

1. R. S. Whaley *
2. J. F. Byrnes *
3. Wyatt Aiken *
4. S. J. Nicholls
5. D. E. Finley *
6. J. W. Ragsdale *
7. A. F. Lever *

SOUTH DAKOTA

1. *C. H. Dillon* *
2. *R. O. Johnson*
3. H. L. Gandy

TENNESSEE

1. *S. R. Sells* *
2. *R. W. Austin* *
3. J. A. Moon *
4. Cordell Hull *
5. W. C. Houston *
6. J. W. Byrns *
7. L. P. Padgett *
8. T. W. Sims *
9. F. J. Garrett *
10. K. D. McKellar *

TEXAS

1. Eugene Black
2. Martin Dies *
3. James Young *
4. Sam Rayburn *
5. H. W. Sumners *
6. Rufus Hardy *
7. A. W. Gregg *
8. J. H. Eagle *
9. G. F. Burgess *
10. J. P. Buchanan *
11. R. L. Henry *
12. Oscar Callaway *
13. J. H. Stephens *
14. J. L. Slayden *
15. J. N. Garner *
16. W. R. Smith *

AT LARGE—J. H. Davis
Jeff. McLemore

UTAH

1. *Joseph Howell* *
2. J. H. Mays

VERMONT

1. *F. L. Greene* *
2. *P. H. Dale*

VIRGINIA

1. W. A. Jones *
2. E. E. Holland *
3. A. J. Montague *
4. W. A. Watson *
5. E. W. Saunders *
6. Carter Glass *
7. James Hay *
8. C. C. Carlin *
9. *C. B. Slemp* *
10. H. D. Flood *

WASHINGTON

1. *W. E. Humphrey* *
2. *L. H. Hadley*
3. *A. Johnson* *
4. *W. L. La Follette* *
5. C. C. Dill

WEST VIRGINIA

1. M. M. Neely *
2. W. G. Brown *
3. Adam B. Littlepage
4. *H. H. Moss* *
5. *Ed. Cooper*

AT LARGE—*H. Sutherland* *

WISCONSIN

1. *H. A. Cooper* *
2. M. E. Burke *
3. *J. M. Nelson* *
4. *W. J. Cary* *
5. *W. H. Stafford* *
6. *M. K. Reilly* *
7. *J. J. Esch* *
8. *E. E. Browne* *
9. T. F. Konop *
10. *J. A. Frear* *
11. *I. L. Lenroot* *

WYOMING

AT LARGE—*F. W. Mondell* *

Committees of the House of Representatives.—The following is a list of the House Committees and their chairmen, as organized in December:

Accounts.—J. T. Lloyd, Mo.
Agriculture.—A. F. Lever, S. C.
Alcoholic Liquor Traffic.—A. J. Sabath, Ill.
Appropriations.—J. J. Fitzgerald, N. Y.
Banking and Currency.—Carter Glass, Va.
Census.—Harvey Helm, Ky.
Claims.—E. W. Pou, N. C.
Coinage, Weights and Measures.—Wm. A. Ashbrook, O.
District of Columbia.—Ben Johnson, Ky.
Education.—D. M. Hughes, Ga.
Election of President, Vice-President, and Representatives in Congress.—W. W. Rucker, Mo.
Elections No. 1.—H. D. Stephens, Miss.
Elections No. 2.—J. A. Hamill, N. J.
Elections No. 3.—L. L. Morgan, La.
Enrolled Bills.—L. Lazaro, La.
Expenditures in the Department of Agriculture.—R. L. Doughton, N. C.
Expenditures in the Department of Commerce.—Chas. B. Smith, N. Y.
Expenditures in the Interior Department.—Tom Stout, Mont.
Expenditures in the Department of Justice.—W. W. Bailey, Pa.
Expenditures in the Department of Labor.—J. P. Maher, N. Y.
Expenditures in the Navy Department.—Rufus Hardy, Tex.
Expenditures in the Post Office Department.—C. H. Tavenner, Ill.
Expenditures in the State Department.—C. W. Hamlin, Mo.
Expenditures in the Treasury Department.—C. O. Lobeck, Neb.
Expenditures in the War Department.—J. A. M. Adair, Ind.
Expenditures on Public Buildings.—T. F. Konop, Wis.
Foreign Affairs.—H. D. Flood, Va.
Immigration and Naturalization.—J. L. Burnett, Ala.
Indian Affairs.—J. H. Stephens, Tex.
Industrial Arts and Expositions.—J. C. Cantrill, Ky.
Insular Affairs.—W. A. Jones, Va.
Interstate and Foreign Commerce.—W. C. Adamson, Ga.
Invalid Pensions.—I. R. Sherwood, Ohio.
Irrigation of Arid Lands.—W. R. Smith, Tex.

Judiciary.—Edwin Y. Webb, N. C.
Labor.—D. J. Lewis, Md.
Library.—J. J. Slayden, Tex.
Merchant Marine and Fisheries.—J. W. Alexander, Mo.
Mileage.—James F. Byrnes, S. C.
Military Affairs.—James Hay, Va.
Mines and Mining.—M. D. Foster, Ill.
Naval Affairs.—L. P. Padgett, Tenn.
Patents.—W. A. Oldfield, Ark.
Pensions.—John A. Key, O.
Post Office and Post Roads.—J. A. Moon, Tenn.
Printing.—H. A. Barnhart, Ind.
Public Buildings and Grounds.—Frank Clark, Fla.
Public Lands.—Scott Ferris, Okla.
Railways and Canals.—Martin Dies, Tex.
Reform in the Civil Service.—H. L. Godwin, N. C.
Revision of the Laws.—J. T. Watkins, La.
Rivers and Harbors.—S. M. Sparkman, Fla.
Roads.—D. W. Shackleford, Mo.
Rules.—R. L. Henry, Tex.
Territories.—W. C. Houston, Tenn.
War Claims.—A. W. Gregg, Tex.
Ways and Means.—Claude Kitchin, N. C.

First Session.—The first session of the Sixty-fourth Congress opened on Dec. 6; it was adjourned on Dec. 17 until Jan. 4, 1916. The only public enactment before the recess was:

H. J. Res. 59. Extending the provisions of an act entitled "An act to increase the internal revenue, and for other purposes, approved Oct. 22, 1914, to Dec. 31, 1916." Approved Dec. 17.

THE FEDERAL JUDICIARY

The United States Supreme Court.—Supreme Court justices are appointed for life and receive salaries of $14,500 per year, except the Chief Justice, whose salary is $15,000. The justices of the Supreme Court are:

	Born	App.
Edward D. White, La., Chief Justice	1845	1894
Joseph McKenna, Cal.	1843	1898
Oliver W. Holmes, Mass.	1841	1902
William R. Day, Ohio.	1849	1903
Charles E. Hughes, N. Y.	1862	1910
Willis Van Devanter, Wyo	1859	1910
Mahlon Pitney, N. J.	1858	1912
James C. McReynolds, Tenn.	1862	1914
—— ——*		
Clerk, James D. Maher, D. C.		$6,000
Marshal, Frank Key Green		3,500
Reporter, Chas. H. Butler, N. Y.		4,500

* Associate Justice Joseph Rucker Lamar died in Washington on Jan. 2, 1916 at the age of 58. He was appointed to the U. S. Supreme Court by President Taft in December, 1910, and took the oath of office on Jan. 3, 1911.

United States Circuit Courts of Appeals.—The act of March 3, 1911 (*A. Y. B.*, 1912, p. 231), provides that there shall be in each judicial circuit a Circuit Court of Appeals, which shall consist of three judges, two of whom shall constitute a quorum; the Chief Justice and the associate justices of the Supreme Court assigned to each circuit, and the several district judges within each circuit, shall be competent to sit as judges of the circuit court of appeals within their respective circuits, in addition to the judges of the circuit courts abolished in 1912 (*A. Y. B.*, 1912, p. 231). There were 31 circuit judges on Dec. 31, with two vacancies in the Seventh Circuit. The salary of circuit judges is $7,000.

United States District Courts.—The judicial districts into which the United States is divided are enumerated in the issue of the YEAR BOOK for 1913 (p. 175). On Dec. 31 there were 95 district judges in the United States, exclusive of the noncontiguous territories (salary, $6,000). There are four U. S. district judges in Alaska (salary, $7,500), two in Hawaii (salary, $6,000), one in Porto Rico (salary, $5,000), and one in the Canal Zone (salary, $6,000).

Court of Claims.—Claims against the United States are adjudicated by a Court of Claims consisting of five judges appointed for life or during good behavior, the Chief Justice receiving a salary of $6,500 and the associate judges of $6,000. The Court is now constituted as follows:

Chief Justice.—Edward K. Campbell, appointed 1913.
Judges.—Fenton W. Booth, appointed 1897.
Samuel S. Barney, appointed 1906.
George W. Atkinson, appointed 1905.
George E. Downey, appointed 1915.

Court of Customs Appeals.—The Court of Customs Appeals, created by the tariff act of 1909 to hear appeals in custom cases, is constituted as follows:

Presiding Judge.—Robert M. Montgomery, Michigan.
Associate Judges.—James F. Smith, California; Orion M. Barber, Vermont; Marion De Vries, California; George E. Martin, Ohio.

THE DIPLOMATIC SERVICE

ACCREDITED BY UNITED STATES			ACCREDITED TO UNITED STATES	
AMBASSADORS				
Country	Appointed			Commissioned
Argentina	Frederic Jesup Stimson	1914	Rómulo S. Naón	1912
Austria-Hungary	Frederic C. Penfield	1913	———	———
Brazil	Edwin V. Morgan	1912	Domicio da Gama	1911
Chile	———	———	Señor Don Eduardo Suárez Mujica	1911
France	William G. Sharp	1914	J. J. Jusserand	1903
Germany	James W. Gerard	1913	Count J. H. von Bernstorff	1908
Great Britain	Walter H. Page	1913	Sir Cecil Arthur Spring-Rice	1913
Italy	Thomas N. Page	1913	Count Vincenzo Macchi di Cellere	1914
Japan	George W. Guthrie	1913	Viscount Sutemi Chinda	1912
Mexico	Henry P. Fletcher	1915	Señor Don Eliseo Arredondo	1915
Russia	George T. Mayre	1914	George Bakhméteff	1911
Spain	Joseph E. Willard	1913	Señor Don Juan Riaño y Gayangos	1910
Turkey	Henry Morgenthau	1913	A. Rustem Bey	1914
MINISTERS PLENIPOTENTIARY				
Belgium	Brand Whitlock	1913	E. Havenith	1911
Bolivia	John D. O'Rear	1913	Señor Don Ignacio Calderon	1904
Bulgaria	———	———	Stephan Panaretoff	1915
China	Paul S. Reinsch	1913	V. K. Wellington Koo	1915
Colombia	Thaddeus A. Thompson	1913	Señor Don Julio Betancourt	1912
Costa Rica	Edward J. Hale	1913	Señor Don Manuel Castro Quesada	1915
Cuba	William E. Gonzales	1913	Carlos Manuel de Céspedes	1914
Denmark	Maurice Francis Egan	1907	Constantin Brun	1913
Dominican Republic	William W. Russell	1915	Señor Dr. Don A. Pérez Perdomo	1915
Ecuador	Charles S. Hartman	1913	Señor Don Gonzalo S. Cordova	1913
Greece and Montenegro	Garrett Droppers	1914	———	———
Guatemala	William H. Leavell	1913	Señor Don Joaquin Mendes	1912
Haiti	Arthur Bailly-Blanchard	1914	Solon Ménos	1914
Honduras	John Ewing	1913	Dr. Alberto Membreno	1912
Netherlands and Luxemburg	Henry Van Dyke	1913	W. L. F. C. Van Rappard	1914
Nicaragua	Benjamin J. Jefferson	1913	Sen. Don Emiliano Chamorro	1913
Norway	Albert J. Schmedemann	1913	H. M. Bryn	1910
Panama	William J. Price	1913	Sen. Don Eusebius A. Morales	1913
Paraguay	Daniel F. Mooney	1914	Héctor Valázquez	1913
Persia	John L. Caldwell	1914	Mehdi Khan	1914
Peru	Benton McMillan	1913	Frederico A. Pezet	1912
Portugal	Thomas H. Birch	1913	Viscount de Alte	1902
Rumania, Serbia and Bulgaria	Charles J. Volpicka	1913	———	———
Salvador	Boaz W. Long	1914	Señor Dr. Don Rafael Zaldivar	1915
Siam	William H. Hornibrook	1915	Phya Prabha Karavongse	1914
Sweden	Ira Nelson Morris	1914	W. A. F. Ekengren	1911
Switzerland	Pleasant A. Stovall	1913	Dr. Paul Ritter	
Uruguay	Robert E. Jeffery	1915	Dr. Carlos Maria de Pena	1911
Venezuela	Preston McGoodwin	1913	Señor Don Santos A. Dominici	1914

THE CONSULAR SERVICE

By Act of Congress of Feb. 5, 1915, it is provided that consuls general and consuls will hereafter be appointed with the advice and consent of the Senate to grades and classes of the Service and not to particular posts. They will receive commissions as officers of specific classes and may be assigned by the President to posts of duty as the interest of the Service may require, and may be transferred by the President from one post to another as he may deem proper.

Consuls general and consuls are graded, classified and compensated as follows:

Consuls General	
Class one,	$12,000
Class two,	8,000
Class three,	6,000
Class four,	5,500
Class five,	4,500

Consuls	
Class one,	$8,000
Class two,	6,000
Class three,	5,000
Class four,	4,500
Class five,	4,000
Class six,	3,500
Class seven,	3,000
Class eight,	2,500
Class nine,	2,000

There are in all 56 consuls general and 233 consuls stationed in the principal cities of the various countries of the world. In addition there are 208 consular agents who are subordinate to the principal consular officers.

CIVIL SERVICE

CLINTON ROGERS WOODRUFF

Federal Civil Service.—The Federal Civil Service Commission reports that on June 30, 1915, there were 476,363[1] officers and employees in the executive civil service. Of these 292,296 held positions subject to competitive examination under the civil-service rules, a decrease of 164 during the year. Of the 184,067 persons whose positions are not subject to competitive examination under the civil-service rules, 10,690 are Presidential appointees, 8,930 being postmasters of the first, second and third classes; 5,292 are clerks in charge of contract postal stations; 72,000 are clerks in third- and fourth-class post offices; 8,098 are mail messengers; 12,129 are pension examining surgeons; 20,674 are engaged on the Panama Canal work, chiefly as laborers and minor employees; 204 are temporary employees of the Census Bureau; and 27,464 are unclassified laborers not elsewhere enumerated, of whom 6,500 are subject to tests of physical fitness under labor regulations. The remaining 22,960 are excepted from examination under Schedule A, or are subject to non-competitive examination under Schedule B of the civil-service rules, of whom 1,200 are employed in Washington and the others in branches of the field service. Few important positions are excepted from competitive examination under Schedules A and B. Their great variety will be seen by reference to those schedules.

There was a decrease of 164 in the number of competitive positions during the year. Competitive positions in Washington increased by 751, but the number outside diminished by 915. The most notable changes at Washington were increases of 351 and 423 in the Treasury and Agricultural Departments, respectively, and a decrease of 98 in the Post Office Department. The number of classified employees in field branches of the Treasury Department decreased by 2,743. Most of this decrease was due to the fact that surfmen in the Life-Saving Service became a part of the military service under the law creating the Coast Guard (see *infra*). The number of fourth-class postmasters decreased by 886, and of railway mail clerks by 910. The classified field force of the Interstate Commerce Commission increased by 727, the total force being 1,103, as against 376 on June 30, 1914. In other parts of the service the changes have not been remarkable. In the insular possessions the merit system has been notably successful. In the Panama Canal Zone, in the Philippines, in Hawaii and Porto Rico the civil-service laws have been widely applied and have ensured economy and efficiency in administration.

There has been a marked diminution of political activity on the part of Federal employees. The enforcement of definite restrictions upon political activity, irrespective of party, has given freedom in elections. Employees are no longer forced to pay assessments or coerced in their political action. The enforcement of rules by a central body like the Civil Service Commission is necessary in order that penalties may be made uniform and impartial. In its efficiency work the Civil Service Commission has continued to effect large and permanent savings in the conduct of the departments. This work is being extended to the field service in the application of efficiency schemes and in the use of ratings through boards of personnel at large offices, the heads of which have shown a disposition to avail themselves of the coöperation of the Commission.

The only important legislation affecting the classified service during the year was the act withdrawing the Life-Saving Service from the classified service and placing it in the Coast Guard subject to enlistment; the exception of certain expert high-grade positions in the Federal Trade Commission; and the provision that commercial attachés and

[1] These figures are based upon reports furnished by the several departments to the Commission, as required by the civil-service rules. Owing to inaccuracies inherent in the gathering of data for a work of this magnitude and to inadvertent omissions by the departments, the figures must be accepted as only approximate.

commercial agents shall be appointed by the Secretary of Commerce after an examination to be held under his direction. At the request of the Secretary of Commerce, the Civil Service Commission participates in the examinations for commercial attachés, their clerks and commercial agents. There has been an increasing proportion of high technical and scientific positions filled through competition and an increasing number of candidates possessing a high degree of ability, education and training.

In view of the approaching completion of the Panama Canal and the resulting diminution of work, the President, under date of Jan. 19, 1915, promulgated an order amending the civil-service rules to permit the transfer to the classified service of employees who have been serving in certain excepted positions, who have rendered at least two years' service above the grade of laborer on the Canal, and who were specially recommended by the Governor of the Panama Canal Zone by reason of efficient service and satisfactory conduct. The effect of the order was to make eligible for transfer to appropriate classified positions those great classes of employees engaged upon the engineering and mechanical work of the Canal.

State Civil Service.—In Kansas a Civil Service Commission has been created and rules adopted after consultation with the National Civil Service Reform League. In Nebraska a joint legislative committee has urged the passage of a state civil-service law to be applicable to employees of the legislature as well as to those of the state service. In Connecticut a law was passed practically nullifying the application of the state civil-service law to all but a few minor positions in the state service. A Colorado act removed from the classified service a number of heads of departments and made the terms of the civil-service commissioners coterminous with that of the governor. The Louisiana legislature passed an act creating a Civil Service Commission to have jurisdiction over the appointment of state employees at the port of New Orleans.

Municipal Civil Service.—The report of the New York City Commission for 1914 shows the creation of an examination division involving improvements in the type of examination, in methods of the examination division, and in the method of advertising. In other words, an examination budget is proposed whereby the Commission can plan its work by anticipating in advance the number and character of examinations for the year. The Commission records that during the year 1913, 53 examinations were advertised at a cost of $21,718.30, an average of $409.78 per examination; during the year 1914, 92 examinations were advertised at an average cost of $98.70. The Commission plans the publication of "a civil-service manual" to contain all particulars necessary to candidates applying for civil-service positions, such as physical standards, standards of rating mental examinations, information concerning transfers, reinstatements and promotions; information concerning periodical examinations and qualifications for positions, together with weights in the examinations and other important data of value and interest to the general public. In the year 1914 the New York Commission exercised jurisdiction over 55,570 employees divided as follows: unclassified, 267; exempted class, 805; competitive class, 30,898; non-competitive class, 5,813; labor class, 17,787. During the year the Commission certified 23,843 payrolls and vouchers.

An investigation of the New York City Commission by the State Civil Service Commission was concluded in 1914. Inaugurated by Governor Dix's Commission to embarrass the local Commission, it was actually concluded by the new Commission appointed by Governor Whitman. The report of the preliminary investigation contained a statement that the "civil service had been mishandled in nearly every phase of the local administration and that the merit system had been grossly abused," but the present state Commission declared that it could not agree with these conclusions. As a result of its study of the matter it was convinced that while the municipal Commission might be justly criticized for certain failures and errors of judgment, yet upon the whole their administration

of the civil-service law and rules in New York City had been good, that they had done constructive work which has distinctly improved the methods hitherto existing, and that there is no sufficient reason for the removal of any of them.

The Chicago Commission, which until the change of administration in April was one of the most progressive in the country, laid special stress in its report for 1914 upon the work of its efficiency division. It said:

> Except for the extra work done by the well trained and organized efficiency division and through its coöperation with department heads and the legislative branch of the government, recognized results in municipal administration now existing would have been impossible of accomplishment. It has become an integral part of the municipal government, acting as a coördinating force as between departments and with a broad and general view of the entire activities of the city administration as a whole. It is in a position to aid all branches of the service in solving problems growing out of employment. The Commission therefore recommends that in any plan of charter revision or charter building, the consideration be given to continuing and extending the work of the efficiency division or that, in lieu thereof, provision be made for some other permanent body with like aims and objects.

It then outlined a scheme of employment based on eight years of careful study, the essentials of which it gave as follows: standards of employment; correct classification; grades within classes; uniform salaries; defined lines of promotion based upon duties and responsibilities; correct organization, system and method; measured service; cost figuring of men, material and machinery; individual and group efficiency. In April, 1915, however, following the appointment of a new civil-service board by Mayor Thompson, the efficiency division was dropped, but its work may be continued as a part of the activities of the Finance Committee of Council, to which, from a functional standpoint, it is claimed by some more appropriately to belong.

In St. Louis the new charter provides for a board of efficiency. The examinations held by the board strengthen the public faith in the sincerity of its purposes and the general effectiveness of its methods. The city manager of Springfield, O., has forbidden employees of the classified service to indulge in any political activities. The ordinance committee of the Norfolk, Va., city council has likewise approved an ordinance prohibiting political activity on the part of city officials and employees.

Miscellaneous.—A model civil-service law embodying the essential principles of a practical merit system of public employment has been drafted by a committee representing the National Assembly of Civil Service Commissioners, the National Civil Service Reform League, the National Municipal League and the Chicago Civil Service League, and published in pamphlet form with a proposed form of constitutional amendment to establish the merit system (see also *A. Y. B.*, 1914, p. 184). The report of the model law is prefaced by a statement of what the committee regards as the four principles of the merit system: (1) government should be controlled by the people; (2) public offices and places which are not directly charged with the conduct of general political policies belong of right to all the people; (3) civil service should be efficient; (4) the government in its capacity as an employer should be just and fair to its employees.

Efficiency reports prepared by the sundry state and municipal commissions deal at length with the establishment of the merit system and with suggestions for its improvement where already established. In a number of instances these recommendations are linked with those suggesting a reorganization of the executive branches of government and of the budgetary system (see also VI, *State Administration*).

The eighth annual meeting of the National Assembly of Civil Service Commissioners was held in Los Angeles, June 15-19. F. E. Doty of Los Angeles was elected president, and John T. Doyle, secretary of the Federal Commission, was reëlected secretary. The thirty-fifth annual meeting of the National Civil Service Reform League was held in Philadelphia, Dec. 2 and 3. Richard Henry Dana was reëlected president, and George T. Keyes, 79 Wall Street, New York, secretary.

VI. STATE AND COUNTY GOVERNMENT

JOHN M. MATHEWS

In the following series of tables the more important facts relative to the forty-eight states which at present constitute the American Union are brought together for convenient reference:

1. The first table gives the area and population of the states, together with the dates upon which they severally ratified the Constitution of the United States, or upon which they were admitted to the Union. The population in 1900 and 1910 is given, together with the percentage of increase since 1900, and the rank of the several states in population at the census of 1910.

The population of the continental United States at the thirteenth census taken April 15, 1910, was 91,972,266, an increase of 15,977,691 over the population of June 1, 1900, and an increase of 21 per cent., as compared with an increase of 22.7 per cent. in 1900. The states in which the population increased more than 50 per cent. include Oklahoma, New Mexico, Arizona, Nevada, Washington, Oregon, California, North Dakota, Montana, Wyoming, and Idaho. All these states are situated in the western half of the United States.

Including Alaska, Hawaii, Porto Rico, and military persons abroad, the population was 93,402,151. If the population of the Philippine Islands (7,635,426 in 1903) is added, with estimates for Guam, Samoa and the Canal, the total population of the United States and possessions on April 15, 1910, was 101,100,000. On July 1, 1914, the population of the continental United States, as estimated by the Bureau of the Census, was 98,781,324.

The apportionment of state representatives in Congress (*A. Y. B.*, 1912, p. 159) is based upon the population in the year 1910 as given upon the following page.

2. The second table gives for each state the assessed valuation of property and the rate of taxation in 1912; the total state indebtedness and the amount of sinking funds held against the same in 1913; the total receipts and the total expenditure for the latter year. The data are those of the decennial census of wealth, debt, and taxation, the final reports of which were published in 1915.

3. The third table revises and extends the table on pp. 184-9 of the YEAR BOOK for 1910, which gives the facts in regard to the state constitutions; dates of adoption; methods of ratification of present and former constitutions, and the existing methods of amendment authorized by law in each state.

4. The fourth table gives the state governors; their politics; the length of the governor's term in each state; the date of the beginning and ending of his term; and the governor's salary.

5. The fifth table presents the main features regarding the state legislatures, including the political complexion of the legislatures; number of members of each house; length of the term; frequency of session; the limit upon duration of sessions, if any; and the salaries of members of both branches of the legislature.

6. The sixth table indicates the main facts regarding the state judiciary; the name of the courts and number of judges; how chosen; length of term; and salary.

7. The seventh table indicates the number of counties in each state and the general facts as to the county officers, their titles, which, as a rule, indicate their functions, and whether elected or appointed.

I. THE STATES OF THE UNION

Area, Population, Dates of Ratification and Organization, and Order of Admission to the Union

	Ratification of Constitution	Area	Population, 1900	Population, 1910	Percentage of Increase, 1900–1910	Rank in Population, 1910
New Hampshire	June 21, 1788	9,031	411,588	430,572	4.6	39
Massachusetts	February 6, 1788	8,039	2,805,346	3,366,410	20.0	6
Rhode Island	May 29, 1790	1,067	428,556	542,610	26.6	38
Connecticut	January 9, 1788	4,820	908,420	1,114,756	22.7	31
New York	July 26, 1788	47,654	7,268,894	9,113,614	25.4	1
New Jersey	December 18, 1788	7,514	1,883,669	2,537,167	34.7	11
Pennsylvania	December 12, 1787	44,832	6,302,115	7,665,111	21.6	2
Delaware	December 7, 1787	1,965	184,735	202,322	9.5	46
Maryland	April 28, 1788	9,941	1,188,044	1,294,450	9.0	27
Virginia	June 26, 1788	40,262	1,854,184	2,061,612	11.2	20
North Carolina	November 21, 1789	48,740	1,893,810	2,206,287	16.5	16
South Carolina	May 23, 1788	30,495	1,340,316	1,515,400	13.1	26
Georgia	January 2, 1788	58,725	2,216,331	2,609,121	17.7	10

	Date of Admission	Area	Population, 1900	Population, 1910	Percentage of Increase, 1900–1910	Rank in Population, 1910
Vermont	February 18, 1791	9,124	343,641	355,956	3.6	42
Kentucky	June 1, 1792	40,181	2,147,174	2,289,905	6.6	14
Tennessee	June 1, 1796	41,687	2,020,616	2,184,789	8.1	17
Maine	March 3, 1820	29,895	694,466	742,371	6.9	34
Texas	December 29, 1845	262,398	3,048,710	3,896,543	27.8	5
West Virginia	June 20, 1863	24,022	958,800	1,221,119	27.4	28
Ohio	April 30, 1802	40,740	4,157,545	4,767,121	14.7	4
Louisiana	April 8, 1812	45,409	1,381,625	1,656,388	19.9	24
Indiana	December 11, 1816	35,885	2,516,462	2,700,876	7.3	9
Mississippi	December 10, 1817	46,362	1,551,270	1,797,114	15.8	21
Illinois	December 3, 1818	56,002	4,821,550	5,638,591	16.9	3
Alabama	December 14, 1819	51,279	1,828,697	2,138,093	16.9	18
Missouri	March 2, 1821	68,727	3,106,665	3,293,335	6.0	7
Arkansas	June 15, 1836	52,525	1,311,564	1,574,449	66.2	25
Michigan	January 26, 1836	57,480	2,420,982	2,810,173	16.1	8
Florida	March 3, 1845	54,861	528,542	752,619	42.1	33
Iowa	December 28, 1846	55,586	2,231,853	2,224,771	–0.3	15
Wisconsin	May 29, 1848	55,256	2,069,042	2,333,860	12.7	13
California	September 9, 1850	156,092	1,485,053	2,377,549	60.1	12
Minnesota	May 11, 1858	80,858	1,751,394	2,075,708	18.5	19
Oregon	February 14, 1859	95,607	413,536	672,765	62.7	35
Kansas	January 29, 1861	81,774	1,470,495	1,690,949	15.0	22
Nevada	March 21, 1864	109,821	42,335	81,875	93.4	48
Nebraska	February 9, 1867	76,808	1,066,300	1,192,214	11.8	29
Colorado	March 3, 1875	103,658	539,700	799,024	48.0	32
North Dakota	February 22, 1889	70,183	319,146	577,056	80.8	37
South Dakota	February 22, 1889	76,868	401,570	583,888	45.4	36
Montana	February 22, 1889	145,776	243,329	376,053	54.5	40
Washington	February 22, 1889	66,836	518,103	1,141,990	120.4	30
Idaho	July 3, 1890	83,779	161,772	325,594	101.3	44
Wyoming	July 10, 1890	97,594	92,531	145,965	57.7	47
Utah	July 16, 1894	82,184	276,749	373,351	34.9	41
Oklahoma	November 16, 1907	69,414	790,391	1,657,155	109.7	23
New Mexico	January 6, 1912	122,580	195,310	327,301	67.6	43
Arizona	February 14, 1912	113,020	122,931	204,354	66.2	45

Area.—The total area of continental United States is 2,974,159 sq. miles. The total area, including Alaska and Hawaii, is 3,624,122 sq. miles. The area of Alaska is 590,884 sq. miles; of the Hawaiian Islands, 6,449 sq. miles; of the Philippine Islands, 115,026 sq. miles; of Porto Rico, 3,435 sq. miles; and of the Panama Canal Zone, 448 sq. miles.

II. STATE INDEBTEDNESS, TAXATION, REVENUES, AND EXPENDITURES

The figures in the following table are taken from the final reports of the decennial census of wealth, debt and taxation, published in 1914 and 1915. They relate, as to assessed valuations and tax rates, to the year 1912, and as to the other items, to the year 1913.

State	Assessed Valuation of Property, 1912	Tax Rate per $100, 1912	Bonded Indebtedness, June 30, 1913	Sinking Fund Assets, June 30, 1913	Total Receipts, 1913	Total Expenditures, 1913
Alabama	$566,807,488	$1.76	$9,057,000	.....	$6,649,515	$6,394,534
Arizona	140,338,191	3.11	3,528,275	$529,553	3,778,441	3,155,800
Arkansas	427,473,108	2.48	1,250,500	14,434	3,541,143	3,162,538
California	2,921,277,451	2.15	10,098,500	868,314	25,991,616	23,837,110
Colorado	422,330,199	4.01	1,144,400	.....	4,687,811	6,639,055
Connecticut	1,041,334,019	1.58	7,064,100	.....	11,518,635	9,631,977
Delaware	93,814,011	1.91	565,000	63,663	882,404	839,777
Florida	212,887,518	3.96	601,567	.....	3,023,698	2,870,603
Georgia	842,358,342	2.19	6,352,500	.....	6,436,364	6,049,923
Idaho	167,512,157	4.15	2,364,250	307,389	2,787,456	3,101,566
Illinois	2,343,673,232	3.62	17,500	.....	15,120,663	14,251,864
Indiana	1,898,307,218	2.40	655,615	478	10,769,130	10,702,694
Iowa	902,092,597	4.05	.....	.....	6,446,843	6,056,024
Kansas	2,746,900,291	1.02	370,000	126,879	8,472,355	8,026,287
Kentucky	1,031,174,033	1.71	6,394	10,307	13,276,849	13,215,494
Louisiana	550,517,808	2.62	12,019,028	.....	7,422,491	7,558,534
Maine	416,891,264	2.16	700	.....	5,398,453	5,443,475
Maryland	1,235,457,607	1.32	13,035,750	5,701,837	9,934,275	9,527,701
Massachusetts	4,803,078,625	1.72	117,134,662	38,251,901	55,441,062	55,279,432
Michigan	2,317,561,634	2.07	.....	.....	13,222,744	12,932,147
Minnesota	1,474,585,315	2.58	900,000	.....	17,170,584	17,686,346
Mississippi	411,551,004	2.41	1,506,899	.....	4,469,732	4,790,780
Missouri	1,860,087,956	1.91	285,000	104,309	8,622,207	7,679,089
Montana	346,550,585	3.24	1,200,000	235,036	4,501,646	4,023,086
Nebraska	463,371,889	4.27	.....	.....	5,307,044	5,223,284
Nevada	101,087,082	2.25	234,000	63,064	1,486,212	1,429,250
New Hampshire	439,683,132	1.59	1,376,100	165,000	2,948,704	2,715,153
New Jersey	2,490,490,534	1.98	.....	.....	18,625,670	15,164,012
New Mexico	72,457,454	4.73	1,148,000	18,423	1,286,532	1,199,355
New York	11,131,778,917	1.99	109,702,660	25,252,085	101,595,972	85,923,968
North Carolina	747,500,632	1.34	7,532,950	.....	3,825,248	3,752,613
North Dakota	293,048,119	4.05	937,300	116,876	4,360,951	4,321,576
Ohio	6,481,059,158	1.18	1,665	158,388	19,415,442	18,402,232
Oklahoma	1,193,655,846	1.65	3,055,000	.....	4,562,356	9,935,528
Oregon	905,011,679	1.89	653	.....	4,814,691	4,413,098
Pennsylvania	5,068,802,988	1.84	142,160	785,511	32,369,386	35,510,906
Rhode Island	619,010,208	1.32	5,580,000	673,493	4,241,580	4,120,994
South Carolina	291,531,003	2.37	6,444,165	921,839	3,277,877	3,237,016
South Dakota	354,278,413	3.03	.....	.....	4,123,024	4,190,178
Tennessee	625,686,792	2.26	11,793,666	86	4,670,229	4,122,851
Texas	2,532,710,050	1.30	3,977,500	.....	13,818,288	13,525,395
Utah	200,299,207	3.26	1,210,000	.....	3,959,978	4,169,872
Vermont	221,530,142	1.81	.....	.....	2,814,245	3,020,631
Virginia	864,962,621	1.60	22,094,944	2,611,706	9,329,521	9,383,186
Washington	1,005,086,251	3.10	331,024	.....	8,318,316	7,324,465
West Virginia	1,168,012,658	0.86	.....	.....	5,062,705	5,057,810
Wisconsin	2,466,636,793	1.49	.....	.....	15,337,273	16,573,895
Wyoming	180,750,630	1.44	117,000	.....	1,529,474	1,274,836

III. STATE CONSTITUTIONS

For the revision of the table of state constitutions on pp. 184–9 of the AMERICAN YEAR BOOK for 1910, it is necessary only to note that the following states have adopted popular initiative as a second means of proposing amendments: California (1911), Colorado (1910), Michigan (1913), Nebraska (1912), North Dakota (1914), and Ohio (1912). The data for Arizona and New Mexico, admitted as states in 1912, are as follows:

STATE	Date	METHOD OF ADOPTION		PRESENT METHOD OF AMENDMENT			PRESENT METHOD OF GENERAL REVISION	
		Framed by	Popular Ratification	Proposed by	Limitations	Popular Ratification	Convention Called by	Popular Ratification
New Mexico	1911	Convention	Yes	⅔ members of each house	Not more than three at one time	Majority equal to 40 per cent. of total vote in one-half counties	¾ of each house and popular vote	Majority of votes
Arizona	1911	Convention	Yes	(1) Majority of each house (2) Popular initiative		Majority vote on question	Popular vote	Majority vote

IV. STATE AND TERRITORIAL GOVERNORS

STATE OR TERRITORY	Governor	Capital	Length of Term	Term Expires	Salary
Maine	O. C. Curtis	Augusta	2	January, 1917	$5,000
New Hampshire	*R. H. Spaulding*	Concord	2	January, 1917	3,000
Vermont	*C. W. Gates*	Montpelier	2	January, 1917	2,500
Massachusetts	*S. W. McCall*	Boston	1	January, 1917	10,000
Rhode Island	*R. L. Beeckman*	Providence	2	January, 1917	3,000
Connecticut	*M. H. Holcomb*	Hartford	2	January, 1917	5,000
New York	*C. S. Whitman*	Albany	2	January, 1917	10,000
New Jersey	J. F. Fielder	Trenton	3	January, 1917	10,000
Pennsylvania	*M. G. Brumbaugh*	Harrisburg	4	January, 1919	10,000
Delaware	*C. R. Miller*	Dover	4	January, 1917	4,000
Maryland	E. C. Harrington	Annapolis	4	January, 1920	4,500
Virginia	H. C. Stuart	Richmond	4	February, 1918	5,000
West Virginia	*H. D. Hatfield*	Charleston	4	March, 1917	5,000
North Carolina	Locke Craig	Raleigh	4	January, 1917	5,000
South Carolina	R. I. Manning	Columbia	2	January, 1917	3,000

Democrats in Roman, Republicans in *Italics*.

State or Territory	Governor	Capital	Length of Term	Term Expires	Salary
Georgia	N. E. Harris	Atlanta	2	June, 1917	$5,000
Florida	Park Trammell	Tallahassee	4	January, 1917	6,000
Kentucky	A. O. Stanley	Frankfort	4	December, 1919	6,500
Tennessee	T. C. Rye	Nashville	2	January, 1917	4,000
Alabama	Charles Henderson	Montgomery	4	January, 1919	7,500
Mississippi	T. G. Bilbo	Jackson	4	January, 1920	4,500
Arkansas	G. W. Hays	Little Rock	2	January, 1917	4,000
Louisiana	Luther E. Hall	Baton Rouge	4	May, 1916	5,000
Texas	J. E. Ferguson	Austin	2	January, 1917	4,000
Oklahoma	R. L. Williams	Oklahoma City	4	January, 1919	4,500
Ohio	*F. B. Willis*	Columbus	2	January, 1917	10,000
Indiana	S. M. Ralston	Indianapolis	4	January, 1917	8,000
Illinois	Edward F. Dunne	Springfield	4	January, 1917	12,000
Michigan	W. N. Ferris	Lansing	2	January, 1917	5,000
Wisconsin	*E. L. Philipp*	Madison	2	January, 1917	5,000
Minnesota	J. A. A. Burnquist	St. Paul	2	January, 1917	7,000
Iowa	*Geo. W. Clarke*	Des Moines	2	January, 1917	5,000
Missouri	E. W. Major	Jefferson City	4	January, 1917	5,000
Kansas	*Arthur Capper*	Topeka	2	January, 1917	5,000
Nebraska	J. H. Morehead	Lincoln	2	January, 1917	2,500
South Dakota	*F. M. Byrne*	Pierre	2	January, 1917	3,000
North Dakota	*L. B. Hanna*	Bismarck	2	January, 1917	5,000
Montana	S. V. Stewart	Helena	4	January, 1917	7,500
Idaho	Moses Alexander	Boise	2	January, 1917	5,000
Wyoming	J. B. Kendrick	Cheyenne	4	January, 1919	4,000
Colorado	*G. A. Carlson*	Denver	2	January, 1917	5,000
New Mexico	W. C. McDonald	Santa Fe	4	January, 1916	5,000
Arizona	G. W. P. Hunt	Phoenix	2	January, 1917	4,000
Utah	*Wm. Spry*	Salt Lake City	4	January, 1917	4,000
Nevada	Emmet Boyle	Carson City	4	January, 1919	4,000
California	H. W. Johnson	Sacramento	4	January, 1919	10,000
Oregon	*James Withycombe*	Salem	4	January, 1919	5,000
Washington	Ernest Lister	Olympia	4	January, 1917	6,000
Alaska	J. F. A. Strong	Juneau	4	April, 1917	7,000
Hawaii	L. E. Pinkham	Honolulu	4	November, 1917	7,000
Porto Rico	Arthur Yager	San Juan	4	November, 1917	8,000
Philippine Islands	F. B. Harrison	Manila	Indef.		13,500

Democrats in Roman, Republicans in *Italics*, Progressives in SMALL CAPS.

	Number of Members		Length of Term (years)		Regular Sessions	Regular Session Begins	Limit of Session (days)	Salary
	Senate	House	Senate	House				
Maine	31	151	2	2	Biennial	January, 1917	None	$300 per year.
New Hampshire	24	402	2	2	Biennial	January, 1917	None	200 per term.
Vermont	30	246	2	2	Biennial	January, 1917	None	4 per day.
Massachusetts	40	240	1	1	Annual	January, 1916	None	1,000 per year.
Rhode Island	39	100	2	2	Annual	January, 1916	60	5 per day.
Connecticut	35	258	2	2	Biennial	January, 1917	5 mo.	300 per year.
New York	51	150	2	1	Annual	January, 1916	None	$1,500 per year.
New Jersey	21	60	3	1	Annual	January, 1916	None	500 per year.
Pennsylvania	50	207	4	2	Biennial	January, 1917	None	1,500 per year.
Delaware[1]	17	35	4	2	Biennial	January, 1917	60	5 per day.
Maryland	27	102	4	2	Biennial	January, 1918	90	$5 per day.
Virginia	40	100	4	2	Biennial	January, 1918	60[2]	500 per session.
West Virginia	30	86	4	2	Biennial	January, 1917	45	4 per day.
North Carolina	50	120	2	2	Biennial	January, 1917	60	4 per day.
South Carolina	44	124	4	2	Annual	January, 1916	None	200 per session.
Georgia	44	189	2	2	Annual	June, 1916	50	4 per day.
Florida	32	71	4	2	Biennial	April, 1917	60	6 per day.
Kentucky	38	100	4	2	Biennial	January, 1918	60	$10 per day.
Tennessee	33	99	2	2	Biennial	January, 1917	None	4 per day.
Alabama	35	106	4	4	Quadrennial	January, 1919	50	4 per day.
Mississippi	45	136	4	4	Biennial	January, 1918	45	500 per session.
Arkansas	36	100	2	2	Biennial	January, 1917	90	6 per day.
Louisiana	42	115	4	4	Biennial	May, 1916	60	5 per day.
Texas	31	142	4	2	Biennial	January, 1917	60	5 per day.
Oklahoma	44	98	4	2	Biennial	January, 1917	60	6 per day.

Democratic legislatures in Roman; Republican in *Italics*. [1] Republican Senate, Democratic House. [2] Can be extended 30 days by 3/5 vote.

State or Territory	Number of Members		Length of Term (years)		Regular Sessions	Sessions Begin	Limit of Session (days)	Salary
	Senate	House	Senate	House				
Ohio	33	123	2	2	Biennial	January, 1917	None	$1,000 per year.
Indiana	50	100	4	2	Biennial	January, 1917	60	6 per day.
Illinois	51	153	4	2	Biennial	January, 1917	None	3,500 per session.
Michigan	32	100	2	2	Biennial	January, 1917	None	800 regular session. 5 per day, extra session.
Wisconsin	33	100	4	2	Biennial	January, 1917	None	500 per session.
Minnesota	67	130	4	2	Biennial	January, 1917	90	1,000 per session.
Iowa	50	108	4	2	Biennial	January, 1917	90	1,000 regular session. 10 per day, extra session.
Missouri	34	142	4	2	Biennial	January, 1917	70	5 per day.
Kansas	40	125	4	2	Biennial	January, 1917	None	3 per day.
Nebraska[1]	33	100	2	2	Biennial	January, 1917	None	600 per session.
South Dakota	45	104	2	2	Biennial	January, 1917	60	5 per day.
North Dakota	49	112	4	2	Biennial	January, 1917	60	5 per day.
Montana	41	93	4	2	Biennial	January, 1917	60	$10 per day.
Idaho	33	61	2	2	Biennial	January, 1917	60	5 per day.
Wyoming	27	57	4	2	Biennial	January, 1917	40	8 per day.
Colorado	35	65	4	2	Biennial	January, 1917	None	1,000 per session.
New Mexico	24	49	4	2	Biennial	January, 1917	60	5 per day.
Arizona	19	35	2	2	Biennial	January, 1917	60	7 per day.
Utah	18	45	4	2	Biennial	January, 1917	60	4 per day.
Nevada	22	53	4	2	Biennial	January, 1917	60	10 per day.
California†	40	80	4	2	Biennial	January, 1917	§	1,000 regular session. 10 per day, extra session.
Oregon	30	60	4	2	Biennial	January, 1917	40	3 per day.
Washington	42	97	4	2	Biennial	January, 1917	60	5 per day.
Alaska	8	16	4	2	Biennial	March, 1917	60	$15 per day.
Hawaii	15	30	4	2	Biennial	February, 1917	60	$600 per session. 5 per day, members of House.
Porto Rico	11	35	4	2	Annual	February, 1916	60	2,500 per year for 4 members of Senate, 5 serving without pay.
Philippine Islands	9[2]	78	Indef.	4			90	Commission, $4,500 and $6,750; Assembly, $15 per day.

Democratic legislatures in Roman; Republican in *Italics*. Those marked † have Progressive majorities. [1] Republican Senate, Democratic House. [2] Commission. § Split session; first part 30 days; recess 30 days; no limit to second part.

State	Highest State Court					Other Courts				
	Name of Court	No. of Judges	Length of Term (years)	How Chosen	Salary	Name	No. of Dists.	No. of Judges	Term (years)	How Chosen
Maine	Supreme Court	8	7	Gov. and Council	$5,000	Nisi Prius	.....	.....	.....	.....
						Superior Courts in 2 counties	.....	2	7	Gov. and Council
New Hampshire	Supreme Court	5	(a)	Gov. and Council	4,500	Superior Court	10	5	(a)	Gov. and Council
					4,000					
Vermont	Supreme Court	5	2	Legislature	4,000	County Courts	14	6	2	Legislature
Massachusetts	Supreme Court	7	(b)	Gov. and Council	10,500	Superior Court	.....	28	(b)	Gov. and Council
					10,000					
Rhode Island	Supreme Court	5	(c)	Legislature	6,000	Superior Court	.....	7	(c)	Legislature
						District Courts	12	13	3	Legislature
Connecticut	Court of Errors	5	8	Gov. and Legislature	8,000	Superior Court	8	11	8	Gov. and Legis.
						Court of Common Pleas in 5 counties		9	4	Gov. and Legis.
New York	Court of Appeals	7	14	Elected	$14,200	Appellate Division	4	22	.....	.....
					13,700	Supreme Court	9	104	14	Elected
						County Courts	.....	.....	6	Elected
New Jersey	Court of Errors and Appeals	16	7	Gov. and Senate	13,000	Chancery	.....	9	7	Gov. and Senate
					12,000					
						Supreme Court	9	9	7	Gov. and Senate
						Circuit Court	6	6	7	Gov. and Senate
						County Courts	.....	.....	.....	Gov. and Senate
Pennsylvania	Supreme Court	7	21	Elected	13,500	Superior Court	5	7	10	Elected
					13,000	Court of Common Pleas	.....	.....	.....	.....
Delaware	Court of Errors and Appeals	6	12	Gov. and Senate	5,000	Chancellor	.....	.....	12	Gov. and Senate
Maryland	Court of Appeals	8	15	Elected by Districts	$6,800	Circuit Courts	8	22	15	Elected
						Special Courts, in Balt.	.....	.....	.....	.....
Virginia	Supreme Court of Appeals	5	12	Legislature	5,200	Circuit Courts	31	31	8	Legislature
					5,000					
West Virginia	Supreme Court of Appeals	5	12	Elected	5,500	Circuit Courts	21	22	8	Elected
North Carolina	Supreme Court	5	8	Elected	4,650	Superior Court	16	16	8	Elected
South Carolina	Supreme Court	5	10	Legislature	3,000	Circuit Courts	13	13	4	Elected
Georgia	Supreme Court	6	6	Elected	4,000	Court of Appeals	3	3	6	Elected
						Superior Court	28	31	4	Elected
Florida	Supreme Court	5	6	Elected	4,500	Circuit Courts	13	14	4	Gov. and Senate
						County Courts	.....	.....	.....	.....

(a) Until 70 years of age. (b) During good behavior. (c) Until removed by the legislature.

State	Highest State Court					Other Courts				
	Name of Court	No. of Judges	Length of Term (years)	How Chosen	Salary	Name	No. of Dists.	No. of Judges	Term (years)	How Chosen
Kentucky	Court of Appeals	7	8	Elected by districts	$5,000	Circuit Courts	38	38	6	Elected
Tennessee	Supreme Court	5	8	Elected	5,000	Court of Civil Appeals	.....	5	8	Elected
						Chancery Court	14	14	8	Elected
						Circuit Courts	18	18	8	Elected
						Criminal Court	8	8	8	Elected
Alabama	Supreme Court	7	6	Elected	5,000	Chancery Courts	5	5	6	Elected
						Circuit Courts	16	16	6	Elected
Mississippi	Supreme Court	3	9	Gov. and Senate	4,500	Chancery Courts	.....	.....	4	Gov. and Senate
						Circuit Courts	13	.....	4	Gov. and Senate
Arkansas	Supreme Court	5	8	Elected	4,000	Circuit Courts	17	.....	4	Elected
Louisiana	Supreme Court	5	.....	Elected	6,000	Circuit Courts of Appeals	6	.....	.....	.....
						District Courts	24	.....	4	Elected
Texas	Supreme Court	3	6	Elected	5,000	Court of Criminal Appeal	.....	3	6	Elected
						Courts of Civil Appeals	9	27	6	Elected
						District Courts	.....	.....	4	Elected
Oklahoma	Supreme Court	5	6	Elected	4,000	Criminal Court of Appeals	3	3	6	Elected
						District Courts	27	27	4	Elected
Ohio	Supreme Court	7	6	Elected	$6,500	Courts of Appeal	8	24	6	Elected
						Courts of Common Pleas	.....	.....	6	Elected
Indiana	Supreme Court	5	6	Elected	6,000	Appellate Courts	2	6	4	Elected
						Circuit Courts	92	92	6	Elected
						Superior Courts in 10 count's	.....	14	4	Elected
Illinois	Supreme Court	7	9	Elected	10,000	Courts of Appeal	4	15	.....	.....
						Circuit Courts	18	65	6	Elected
						County Courts	102	102	4	Elected
Michigan	Supreme Court	8	8	Elected	7,000	Circuit Courts	39	49	6	Elected
Wisconsin	Supreme Court	7	10	Elected	7,500	Circuit Courts	20	25	6	Elected
Minnesota	Supreme Court	5	6	Elected	7,000	District Courts	19	41	6	Elected
Iowa	Supreme Court	7	6	Elected	6,000	District Courts	21	59	4	Elected
Missouri	Supreme Court	7	10	Elected	7,500	Courts of Appeal	3	9	12	Elected
						Circuit Courts	38	65	6	Elected
Kansas	Supreme Court	7	6	Elected	4,000	District Courts	38	42	4	Elected
Nebraska	Supreme Court	7	6	Elected	4,500	District Courts	16	29	4	Elected
South Dakota	Supreme Court	5	6	Elected	3,000	Circuit Courts	12	12	4	Elected
North Dakota	Supreme Court	5	10	Elected	5,000	District Courts	12	12	4	Elected

State	Highest State Court					Other Courts				
	Name of Court	No. of Judges	Length of Term (years)	How Chosen	Salary	Name	No. of Dists.	No. of Judges	Term (years)	How Chosen
Montana	Supreme Court	3	6	Elected	$6,000	District Courts	17	24	4	Elected
Idaho	Supreme Court	3	6	Elected	5,000	District Courts	9	12	4	Elected
Wyoming	Supreme Court	3	8	Elected	5,000	District Courts	7	7	6	Elected
Colorado	Supreme Court	7	6	Elected	5,000	District Courts	13	.....	6	Elected
						County Courts	.....	.....	.....	.....
New Mexico	Supreme Court	3	8	Elected	6,000	District Courts	8	8	6	Elected
Arizona	Supreme Court	3	6	Elected	5,000	Superior Courts	14	14	4	Elected
Utah	Supreme Court	3	6	Elected	5,000	District Courts	7	12	4	Elected
Nevada	Supreme Court	3	6	Elected	6,000	District Courts	10	10	4	Elected
California	Supreme Court	7	12	Elected	8,000	Courts of Appeal	3	9	12	Elected
						Superior Courts	58	98	6	Elected
Oregon	Supreme Court	5	6	Elected	4,500	Circuit Courts	9	16	6	Elected
Washington	Supreme Court	9	6	Elected	6,000	Superior Courts	58	45	4	Elected

VII. COUNTY OFFICERS

State	No. of Counties	County Bd., No. of Members	County Judge	Probate Judge	Prosecuting Attorney	Sheriff	Coroner	Clerk of Court	Register of Probate	County Clerk	Register of Deeds	County Auditor	County Assessor	County Treasurer	County Surveyor	Supt. of Schools	Supt. of Poor	Health Officer
Maine	16	3		El.	El.	El.	App.	El.	El.	.....	El.			El.				
New Hampshire	10	3		App.	El.	El.	App.	App.	El.	.....	El.	App.	El.	El.		El.	App.	App.
Vermont	14		El.	dist.	El.	El.		El.	App.	.....		App.		App.				
Massachusetts	14	3		App.	Dist.	El.	.....	El.	El.	.....	El.			El.				
Rhode Island	5	None				App.		App.										
Connecticut	8	App. 3	s.	dist.	App.	El.	App.	App.				App.		App.				App.
New York	62	Var.	El.	El.	El.	El.	El.	.....		El.	s.	s.		El.		dist.	App.	App.
New Jersey	21	Var.	App.	App.	App.	El.	El.	.....		El.	s.	App.		App.	App.	App.	s.	
Pennsylvania	67	3	El.	El.	El.	El.	El.	El.	El.	App.	El.	El.	El.	El.	El.	El.	s.	App.
Delaware	3	7–10		El.		El.	El.	El.	El.	.....	El.			El.	App.	App.	App.	App.
Maryland	24	3–7		El.	El.	El.	App.	El.		App.	El.			El.	El.	App.		App.
Virginia	100	3–8		.....	El.	El.	App.	El.		El.	.....			El.	App.	App.	App.	App.
	18*a*																	
West Virginia	55	3			El.	El.	App.	El.		El.			El.		El.	El.	App.	App.

VII. COUNTY OFFICERS—*Continued*

State	No. of Counties	County Bd., No. of Members	County Judge	Probate Judge	Prosecuting Attorney	Sheriff	Coroner	Clerk of Court	Register of Probate	County Clerk	Register of Deeds	County Auditor	County Assessor	County Treasurer	County Surveyor	Supt. of Schools	Supt. of Poor	Health Officer
North Carolina	100	3-5			Dist.	El.	El.	El.		.....	El.			El.	El.	App.	App.	App.
South Carolina	44	Var.		El.	Dist.	El.	El.	El.		.....	s.	App.		El.		El.		App.
Georgia	152	3 5	sEl.	El.	Dist.	El.	El.	El.		El.	El.		App.	El.	El.	El.	s.	.....
Florida	52	5	El.	.....	Dist.	El.		El.					El.	El.	El.	El.		App.
Kentucky	120	8	El.	.....	El.	El.	El.	El.		El.			El.		El.	El.		App.
Tennessee	96	Var.	El.	.....	Dist.	El.	App.	El.		.....	El.	.....	s.	El.	App.	App.		App.
Alabama	67	5	.....	El.	Dist.	El.	El.				.....		El.	El.	App.	El.		App.
Mississippi	79	5			El.	El.	El.	El.				El.	El.	El.	El.	El.		App.
Louisiana	60*b*	Var.			El.	El.	El.	.....		El.	.....		El.	El.	App.	El.		App.
Texas	252	3	El.	.....	El.	El.		El.		El.	.....	El.	El.	El.	El.	El.	App.	App.
Oklahoma	78	3		El.	El.	El.	El.			El.	El.		El.	El.	El.	El.	.....	App.
Arkansas	75	Var.	El.	.....	Dist.	El.	El.	El.		.....	.....		El.	El.	El.	App.		
Missouri	114	3		El.	El.	El.	El.	El.		El.	s.	s.	El.	El.	El.	El.		App.
Ohio	88	3	El.	El.	El.	El.	El.	El.		El.		El.	App.	El.	El.	App.		
Indiana	92	3(7)*c*	s.	s.	El.	El.	El.	El.			El.	El.	El.	El.	El.	App.	App.	App.
Illinois	102	Var.	El.	s.	El.	El.	El.	El.		El.	El.	.....	s.	El.	El.	El.	App.	
Michigan	83	Var.		El.	El.	El.	El.	.....		El.	El.	s.		El.	El.	El.	App.	
Wisconsin	71	Var.	El.	El.	El.	El.	El.	El.		El.	El.	.....	El.	El.	El.	El.	App.	App.
Minnesota	86	3-7		El.	El.	El.	El.	El.		.....	El.	El.		El.	El.	El.		.....
Iowa	99	3-7			El.	El.	El.	El.		.....		El.		El.	El.	App.	App.	App.
Kansas	105	3	El.	El.	El.	El.	El.	El.		El.	El.	App.		El.	El.	El.	App.	App.
Nebraska	92	Var.	El.	.....	El.	El.	El.	El.		El.	s.			El.	El.	El.		
South Dakota	63	3-5	El.	.....	El.	El.	El.	El.		.....	El.	El.	s.	El.	El.	El.		App.
North Dakota	50	3-5	El.	El.	El.	El.	El.	El.		.....	El.	El.	s.	El.	El.	El.		App.
Montana	41	3			El.	El.	El.	El.		El.	El.	El.	El.	El.	El.	El.		App.
Idaho	37	3		El.	El.	El.	El.	El.		.....	.....	.....	El.	El.	El.	El.		
Wyoming	21	3		.....	El.	El.	El.	s.		El.	.....		El.	El.	El.	El.		App.
Colorado	60	3–5	El.	.....	Dist.	El.	El.	.....		El.	.....		El.	El.	El.	El.	.....	.....
New Mexico	26	3		El.	Dist.	El.	.....	El.	El.		.....		El.	El.	El.	El.		.....
Arizona	14	3		El.	El.	El.	El.	El.		s.	El.		El.	El.	El.	El.		App.
Utah	27	3			El.	El.		.....		El.	El.	s.	El.	El.	El.	El.		
Nevada	16	3		.....	El.	El.	.....	.....		El.	El.	El.	El.	El.	El.	El.		
California*	58	3-7	El.	.....	El.	El.	El.	.....		El.	s.	El.	El.	El.	El.	El.		App.
Oregon	34	2		.....	Dist.	El.	El.	.....		El.	s.	El.	El.	El.	El.	El.		
Washington	39	3		.....	El.	El.	El.	.....		El.	.....	El.	El.	El.	El.	El.		App.

a. Cities. *b.* Parishes. *c.* 3 county commissioners; 7 members in the county councils. El., an elective county office. s., a county office in some counties. App., an appointive county office. ....., duties performed by some other officer. dist., elected or appointed for district smaller than a county. Var., number varies in different counties. Dist., elected or appointed for district larger than a county. * In Los Angeles county, the most populous county in California, the "short ballot" has been adopted. The only county officers hereafter to be elected by popular vote are the board of supervisors, auditor, district attorney, and assessor. All others are to be appointed by the board of supervisors.

STATE ADMINISTRATION

JOHN M. MATHEWS

Administrative Reform.—The year 1915 has not been remarkable from the standpoint of positive advance in the development of an efficient administrative organization in the states. Few positive provisions looking in this direction have been embodied in the constitutions or placed on the statute books. On the other hand, there has been an increased amount of discussion of the subject, and several noteworthy proposals for state administrative reform have been made in different parts of the country.

The Governors' Conference.—The annual meeting of the state governors was held in Boston in the latter part of August. The attendance of visiting governors was not as large as might be desired, and the world situation and the question of national preparedness had the effect of diverting the attention of the governors to some extent from strictly state matters. The high hopes that were aroused several years ago at the time of the first Conference of Governors have unfortunately not been fully realized. Partly, no doubt, on account of the comparatively short terms of most governors and their consequent lack of sustained interest in the Conference, no efficient central organization has yet been established, from which the best results might be obtained. The Conference does, however, occasionally serve the purpose of attracting the attention of the governors and a limited portion of the public for the time being to certain problems of state administration. The most important subjects of this sort discussed at the Boston meeting were the relation of the governor to the state administrative officers and to the legislature, and the short ballot.

The Governor and the State Administration.—The general feeling evidenced at the Conference of Governors on this topic was that there should be a greater concentration of authority in the governor over the heads of administrative departments. Governor Walsh of Massachusetts declared that while the founders of the nation had hedged in the governor with limitations that tended to reduce him to an ornamental figurehead, it was becoming generally understood of late that the business efficiency indispensable for good government could be obtained only by concentrating power and responsibility to a far greater degree than the fathers planned. As Governor Hammond of Minnesota pointed out, under present arrangements most states have in reality several governors instead of one, and there are consequently a considerable number of separate departments in the state government, instead of three as commonly supposed. Under such circumstances it is hardly to be expected that the state government will work in an efficient or business-like manner, nor will the electorate be in a position to exercise an effective control over the various departments and officers.

The Short Ballot.—To remedy this condition of affairs, the most prominent proposal urged at the Governors' Conference was the adoption of the short ballot. This recommendation was also made by the governors of about a dozen states in their regular messages at the opening of the legislative sessions of 1915. Governor Clarke of Iowa summed it up in the phrase: "When you want representation, elect; when you want administration, appoint." The most conspicuous concrete proposal of the year looking towards the adoption of the short ballot was that contained in the amended constitution of New York, which was defeated at the polls in November. This plan, however, might be more accurately described as the shorter ballot, rather than the short ballot, for the attorney-general and the state comptroller were retained upon the list of elective officers. Since, under the short ballot principle, as usually stated, only those officers are retained on the elective list who are important enough both to deserve and to attract public attention, the proposed New York plan would seem to be a departure from the strict application of the principle. With respect to the comptroller, it was urged by some dur-

ing the early sessions of the convention that he should remain an elective officer because, as the examiner of the accounts of the various state departments and officers, he should not derive his authority from the same source as would the appointive officers whose accounts he was empowered to examine. In the final plan, however, the function of examining accounts was transferred to the commissioner of accounts, who was to be appointed by the governor, so that the retention of the comptroller upon the elective list is not explainable upon this ground. (See also *infra,* and II, *Popular Government.*)

The Governor and Legislation.—In most states the inauguration of a new governor and the beginning of a regular legislative session are practically simultaneous. It thus happens that a new governor has a legislature on his hands and is expected to advise them regarding needed legislation before he has had time to become well acquainted with the duties of his office. In order to obviate this difficulty, the governors of two states (Alabama and Maine), in their messages to the legislatures of 1915, urged that a sufficient interval be allowed to elapse between the inauguration of the governor and the beginning of the legislative session for him to secure some experience in office. If the governor is to be given the power to prepare and transmit to the legislature a budget, he should be allowed sufficient time in which to prepare it before the meeting of the legislature. In order to effect this object, the Pennsylvania Commission on Economy and Efficiency has gone so far as to recommend that the governor be elected in the odd year so that he may have the advantage of at least a year in office before the legislature meets, unless a special session is called. This plan is open to some objections, but in addition to enabling the governor to become acquainted with his duties, it would also incidentally have the very beneficial effect of separating state from national politics, as far as the election of the governor is concerned.

At the Governors' Conference, Governor Walsh of Massachusetts complained that, while the governor has the veto power, he does not have in Massachusetts the power to veto separate items. He must veto or sign the whole bill, even if it is a good bill with only one objectionable feature. He urged that the single item veto be extended to the governor of Massachusetts, as is already the case in the majority of states. A constitutional amendment was proposed in Oregon in 1915, designed to give the governor this power. In no state does the constitution expressly give the governor the power to veto parts of items or to slice appropriations, but this practice is nevertheless followed by some governors, and has been upheld as legal by the supreme courts of one or two states. The justification for this apparent usurpation of power on the part of the governors is the necessity for keeping the total appropriations within the amount of the estimated revenues and thus avoid a deficit. This practice was followed by Governor Dunne of Illinois, who, by vetoing parts of items in the omnibus appropriation bill passed by the legislature of 1915, sliced more than half a million dollars from the aggregate amount. This supposed power of the governor, however, has received a set-back through the decision just rendered by the Illinois Supreme Court, which holds that the act of the governor in attempting to veto a part of an item, either by vetoing the words "per annum" or by disapproving of a specified portion of an item, is a nullity and does not have the effect of vetoing either a portion or the whole of the item. Such an item, therefore, is a valid appropriation in spite of the attempted veto of the governor.

At the Governors' Conference in Boston, an interesting extension of the governor's legislative power was urged by former Governor Mann of Virginia, who declared that conditions could be greatly improved if the initiative were given a governor to submit to the people at a general election any measure the passage of which he had previously recommended but which the legislature had failed to pass. The existence of this power would ordinarily render its use unnecessary, for the legislature would not then undertake to block measures

recommended by the governor which were clearly demanded by public opinion. Not only would the governor's recommendations have greater weight, but the governor's initiative would secure greater popular control over legislation than could be reasonably expected through the popular initiative itself.

The State Budget.—The governors of about a dozen states, in their messages to the legislatures of 1915, urged the adoption of the budget system for the state government. At the Conference of Governors, this method of dealing with state finances was strongly urged by Governor Walsh of Massachusetts, who declared that the governor should have power to fix the total amount of money to be raised and that he should also be held responsible for its distribution. Such control over the appropriations in the hands of the governor would tend to vest in a responsible head supervisory power over the various services of the state government. The most important proposal brought forward during the year looking toward the adoption of the budget system was that contained in the New York constitution, as amended in convention, but which failed of ratification at the polls. According to this plan, it was provided that the governor should submit at each session of the legislature a budget containing a complete scheme of proposed expenditures and estimated revenues. After submission but before final action by the legislature, the governor might amend or supplement the budget. In respect to the consideration of the budget by the legislature, the proposed constitution laid down three important rules: first, the governor and the heads of departments should have the right, and it should also be their duty when requested by either house, to appear and be heard in respect to the budget during the consideration of it and to answer questions in regard to it; second, except in respect to appropriations for the legislature and the judiciary, the legislature could not alter an appropriation bill submitted by the governor otherwise than by striking out or reducing items therein; third, neither house could consider further appropriations until the appropriation bills proposed by the governor should have been finally acted upon by both houses. This budget plan represents a very decided advance over the present lack of system, and would probably have proved to be one of the most salutary features of the proposed constitution, had it been adopted. In this connection may be mentioned the plan proposed by the Illinois Efficiency and Economy Commission for a state finance commission, to be composed of a state comptroller, tax commissioner and revenue commissioner appointed by the governor and Senate and the elected auditor of public accounts and state treasurer *ex officio*, which, as a part of its work, would deal with the preparation of a budget. (See also XIV, *Public Finance.*)

A budget plan for the state, by affording a comprehensive financial programme, would work in the direction of economy in the expenditure of public funds. Economy in expenditure, however, cannot be fully attained so long as each state department, board and institution separately purchases its own supplies. In order to secure economy in respect to this class of expenditure as well as to secure a better quality in the supplies purchased, a number of states have enacted laws creating the office of state purchasing agent. In 1915, California passed a similar statute (Laws of 1915, Ch. 351), which creates the state purchasing department, in charge of the state purchasing agent, to be appointed by the governor and hold office at the pleasure of the governor. The purchasing agent is empowered, upon the approval of the state board of control, to contract for and purchase all supplies necessary for the proper transaction of the business of each state department, commission, board, institution and official.

Reorganization of State Administration.—The present organization of state administration contains little evidence of unified design or systematic planning. It consists merely of a series of separate and disjointed authorities, operating with little reference to each other or to any central control. That this situation is extremely unsatisfactory is being more

and more recognized, and, in spite of occasional setbacks, more frequent and widespread efforts are being made to remedy this condition of affairs. These efforts may be grouped around two principal methods pursued, namely, those of constitutional and of statutory revision.

The advantage of pursuing the method of constitutional revision lies in the fact that in many states a faulty organization of the administration is so crystallized in the organic law that thoroughgoing reorganization is practically impossible without constitutional change. In a number of states, attempts were made during the year to provide for the holding of conventions to revise the constitution. The only convention actually held, however, was that of New York, and, although its work was rejected at the polls, its proposed plan of administrative reorganization is of interest (see II, *Popular Government*). Under this plan, all the civil administrative services and functions of the state, now performed by nearly 150 separate departments, boards, bureaus and officers, would be grouped into the following 17 departments: law, finance, accounts, treasury, taxation, state, public works, health, agriculture, charities and corrections, banking, insurance, labor and industry, education, public utilities, conservation, and civil service. The legislature was required to provide by law for the appropriate assignment of all civil administrative functions to the above departments. Every such function must be grouped under one of these heads, as no additional department could be created by legislative enactment. In most cases the head of each department was to be a single officer or commissioner, but the departments of taxation, public utilities, conservation and civil service were placed in charge of commissions. As previously indicated, the heads of the departments of law and finance were continued as elective officers, but all the others were made appointive. It was provided that such appointments should be made by the governor and the appointees should hold during his pleasure, except that the appointments to membership on the commissions dealing with conservation, civil service, labor and industry, and public utilities, bodies exercising quasi-legislative powers, should be subject to confirmation by the Senate. By greatly reducing the number of separate departments and placing them under the more immediate control of the governor, this plan would undoubtedly form a more efficient organization of the administration than that which now exists. It is to be noted, however, that four of the proposed departments, namely, those of finance, accounts, treasury, and taxation, deal with financial matters, while three others, namely, banking, insurance and public utilities, deal with corporations. The question may be raised, therefore, whether a still more efficient organization might not have been secured by consolidating these seven departments into two, those of finance and corporations.

The alternative method of state administrative reorganization through statutory enactments is that to which most of the state efficiency and economy commissions, enumerated in this department in the YEAR BOOK for 1914 (p. 199), have principally directed their efforts. Such commissions in Illinois and Minnesota particularly made elaborate reports dealing with proposed plans for administrative reorganization. The Illinois commission, for example, recommended the grouping of the various administrative services of the state into ten principal departments, namely, finance, education, law, trade and commerce, labor and mining, health, agriculture, public works, charities and corrections, and military affairs. The reports of both the Illinois and Minnesota commissions were accompanied by proposed bills, the enactment of which by the legislature would carry into effect the changes recommended by the respective commissions. In neither case, however, were the recommendations of the commission enacted into law. Perhaps the greatest advance of the year in the actual enactment of laws looking towards administrative reorganization was effected in New Jersey. In that state laws were passed providing for the creation of the departments of conservation and de-

velopment, commerce and navigation, taxes and assessment, and shell fisheries. Under these departments are grouped services which have heretofore been performed by six, four, two, and seven separate administrative agencies respectively. (N. J. Session Laws, 1915, Chs. 241, 242, 244 and 387.) Furthermore, in order to promote cooperation and efficiency in the engineering work of the state and to avoid duplication, it was provided by law that there should be a monthly meeting of executive officers representing the departments of public roads, public utilities, motor vehicles, conservation and development, commerce and navigation, taxes and assessment, together with the state architect and the representatives of such other departments, boards, and bureaus as the governor may direct. (Session Laws, 1915, Ch. 190.) Such meetings will doubtless prove beneficial in promoting coöperation of the various state departments with each other and with local authorities, and may possibly serve as the first step towards the consolidation of some of the more closely related departments represented at the meetings.

Although it may appear that the net positive result of the movement for economy and efficiency in state administration has thus far been comparatively small, nevertheless the movement itself continues. In January, 1915, a joint resolution of the Oregon Senate was passed calling for the appointment of a committee to make a report looking towards the abolition, consolidation or merging of various state boards, commissions or offices in the interest of more economical and efficient state government. Another encouraging sign is the announcement that President Frank J. Goodnow of Johns Hopkins University has agreed to accept the chairmanship of an efficiency and economy commission in Maryland.

Enforcement of State Law.—Efficiency in the enforcement of state law is impeded by the prevalent system of administrative decentralization and dependence on local authorities. At the Governors' Conference of 1915, Governor Curtis of Maine complained that he had been much criticised for not enforcing the prohibition law of that state, yet the constitution provides merely that he shall execute it, and he has no control over the sheriffs who are the real enforcing authorities. The recent spectacular announcement by Mayor Thompson of Chicago that he would enforce the state Sunday-closing law called public attention to the fact that this law, which has been on the statute books since 1845, has for many years been a dead letter in that city. Candidates for mayor have even run on a platform of non-enforcement, and thus a sort of local option has been created in defiance of the law. There are indications, however, of a curtailment of the dependence of the states upon local officials for the enforcement of state law. For example, California has recently vested in the deputies and agents of the state labor commissioner the power and authority of sheriffs and other peace officers to make arrests and to serve any process throughout the state in the enforcement of the state labor laws (Statutes of California, 1915, Ch. 484).

References.—For details of proposed and established measures of administrative reform, the reports of the various state efficiency and economy commissions should be consulted; see also *American Political Science Review*, May, 1915 (pp. 252-303, 317-22). For bibliography on the New York State Constitutional Convention, see II, *Popular Government*. A digest of the amendments proposed by the convention is given in the following section.

AMENDMENTS TO STATE CONSTITUTIONS

On the following pages are given brief digests of the constitutional amendments submitted to the people of the various states during 1914, with the official returns of the votes thereon, and amendments passed by the state legislatures for submission in a subsequent year. Many of the important amendments are discussed in detail in other departments of the YEAR BOOK; full references will be found in the Index.

Alabama.—Submitted Dec. 27:

Amending Art. XI, Sec. 216, authorizing the city of Birmingham to levy a rate of taxation not exceeding 1½ per cent. of the assessed valuation of property. Defeated, 18,664 for, 27,124 against.

To be submitted on Jan. 18, 1916:

Amending Art. XI, Sec. 213, permitting the issuance of bonds for the refunding of the bonded debt of the state.

To be submitted in November, 1916:

Amending Art. IV, Sec. 48, providing for biennial sessions of the legislature.

Amending Art. XI, Sec. 216, obliging the city of Selma to collect annually additional taxes of 0.3 per cent. for school purposes.

Amending Art. XIII, by striking out Sec. 250, relating the protection of bank depositors and note-holders.

Amending Art. XVII, Sec. 281, fixing the salaries, compensations and allowances to be paid to the officers of Montgomery County.

Amending the constitution by adding Art. XIX, authorizing counties and districts to levy and collect a special tax not exceeding 30 cents on each $100 of taxable property.

Arkansas.—The amendment to Art. XVI, Sec. 1, authorizing municipalities to issue bonds for certain purposes with the consent of a majority of the qualified electors, reported as adopted in the last issue of the YEAR BOOK (p. 201), was declared to have failed of adoption by the State Supreme Court on March 22.

To be submitted in November, 1916:

Amending the constitution, authorizing counties to levy taxes and to issue bonds for road construction and maintenance.

Amending the constitution, raising the maximum school tax in school districts from seven to twelve mills. Proposed by initiative petition.

Amending Amendment No. 10, relaxing limitations on the use of the initiative, protecting initiated measures against amendment by the legislature and invalidation by the courts, and extending the initiative and referendum to counties and municipalities. Proposed by initiative petition.

Passed by the legislature of 1915 for subsequent submission (the constitution permitting the submission of only three amendments at one time):

Amending Art. XVI, Sec. 5, prescribing uniformity of taxation and authorizing the legislature to levy graduated taxes on incomes and on unimproved land.

Amending Art. XXI, extending the suffrage to women.

Arizona.—To be submitted in November, 1916.

Amending Art. IV, Sec. 1, providing that measures submitted under the initiative and referendum shall receive for passage a majority of the vote cast in the election.

Amending Art. IX, Sec. 2, providing that the property of widows shall be exempt from taxation not exceeding the sum of $2,000 when the total assessment does not exceed $5,000.

California.—Submitted Oct. 26:

Amending Article IV, Sec. 1, providing that no law creating a bonded indebtedness shall be enacted by initiative by electors without the consent of two-thirds of the qualified electors voting thereon, and authorizing the legislature to protect initiative and referendum petitions from fraud and misrepresentation. Defeated, 121,210 for, 127,160 against.

Amending Article IV, Sec. 31, authorizing the legislature to provide systems of land colonization and rural credits. Defeated, 124,247 for, 132,320 against.

Amending Article VI by adding Sec. 6½, making the term of office of superior judges twelve years and declaring them subject to recall, impeachment and removal provisions relating to judges. Defeated, 47,229 for, 213,067 against.

Amending Article VI by adding Sec. 10½, providing that when the term of office of judge of certain courts expires on the first Monday in January following general election, the person appointed by the Governor to fill the vacancy therein shall hold for the remainder of the unexpired term for which such judge was elected or appointed. Defeated, 124,610 for, 125,124 against.

Amending Article XI, Sec. 7½, enabling county charters to provide for the election, appointment, tenure of office and duties of all county officers. Defeated, 85,571 for, 152,097 against.

Amending Article XI, Sec. 16½, providing that state, county or municipal moneys may be deposited in bank under such conditions as may be provided by law adopted by initiative or by two-thirds vote of each house of the legislature. Defeated, 92,981 for, 151,845 against.

Amending Article XI by adding Sec. 20, authorizing the state, counties or municipalities to condemn property in excess of actual requirements for public purposes. Defeated 92,048 for, 155,786.

Amending Article XIII, Secs. 1 and 9, and repealing Secs. 10 and 14, authorizing the legislature to provide by law for classification of property for purposes of taxation. Defeated, 42,158 for, 205,597 against.

Amending Article XIII, Sec. 11½, exempting from taxation church property used solely for social purposes. Defeated, 94,460 for, 168,171 against.

Connecticut.—Submitted in 1915 to the electors in town meeting; the election was not completed at the end of the year, but the returns indicated adoption by a substantial majority:

Amending Art. XXVII, Sec. 3, of the amendments, authorizing the General Assembly to provide by law for mileage allowance to members.

Florida.—To be submitted in November, 1916:

Amending Art. VI, Sec. 1, prescribing residence, literacy, and property qualifications for the right of suffrage.

Amending Art. VII, Secs. 2-4, relating to the election, term, and apportionment of members of the legislature.

Amending Art. IX, Sec. 9, exempting from taxation property to the value of $500 of widows and disabled persons.

Idaho.—To be submitted in November, 1916:

Amending Art. III, by adding Sec. 26, prohibiting the manufacture and sale of intoxicating liquors for beverage purposes within the state.

Amending Art. IX, Sec. 8, enlarging the powers of the State Board of Land Commissioners.

Illinois.—To be submitted in November, 1916:

Amending Art. IX by adding Sec. 14, authorizing the legislature to provide for the taxation of personal property, and providing for uniformity of taxation and exemptions.

Iowa.—To be submitted in June, 1916:

Amending Art. II, Sec. 1, extending the suffrage to women.

To be submitted in November, 1916:

Amending Art. II, Sec. 7, relating to the time of holding general elections.

Kentucky.—Submitted Nov. 2:

Amending the constitution to permit the employment of convict labor upon public roads and bridges. Adopted, 81,739 for, 37,855 against.

Amending Sec. 171, giving the legislature the power to classify property for purposes of taxation. Adopted, 67,449 for, 35,467 against.

Louisiana.—A proposal submitted by the legislature for the call of a constitutional convention was submitted at a special election on Aug. 31 and defeated by a vote of 29,711 to 35,796.

Maryland.—Submitted Nov. 2:

Amending the constitution by adding Art. XI-A, granting Baltimore City and counties power to legislate in local affairs and to create municipal charters. Adopted, 50,436 for, 25,160 against.

Amending Art. III by adding Sec. 60, empowering the General Assembly to provide by law for suspended sentences, for indeterminate sentences and for the parole of prisoners. Adopted, 49,338 for, 25,886 against.

Amending Art. XV of the Declaration of Rights, providing for the classification of property for taxation. Adopted, 49,918 for, 26,722 against.

Amending the constitution by adding Art. XVI, providing for the referendum. Adopted, 51,880 for, 24,659 against.

Massachusetts.—Submitted Nov. 2:

Amending Art. III of the amendments, extending the suffrage to women. Defeated, 162,615 for, 295,702 against.

Amending the constitution to empower the General Court to authorize the taking of land to relieve congestion of population and to provide homes for citizens. Adopted, 284,568 for, 95,148 against.

Amending the constitution relative to the taxation of incomes and the granting of reasonable exemptions. Adopted, 269,748 for, 98,093 against.

Michigan.—Submitted April 5:

Amending Art. VIII by adding Sec. 15a, authorizing drainage districts established under provision of law to issue bonds for drainage purposes. Defeated, 191,337 for, 198,553 against.

To be submitted in November, 1916:

Amending Art. V, Sec. 30, providing for the repeal of local or special acts in effect Jan. 1, 1909, by two-thirds vote of the legislature.

Amending Art. XII by adding Sec. 10, relating to the incorporation, regulation and supervision of fraternal benefit societies with power to issue death benefit certificates. Proposed by initiative petition.

Minnesota.—To be submitted in November, 1916:

Amending Article I, Sec. 13, relating to the taking of private property for drainage purposes.

Amending Article IV, Sec. 1, providing for the initiative and referendum.

Amending Article IV, Sec. 11, permitting the approval in part by the Governor of single items of an appropriation bill.

Amending Article VI, Sec. 2, increasing the number of associate justices of the Supreme Court from four to six, and providing for the appointment of the clerk by the court.

Amending Article VI, Sec. 7, changing the length of the term of the judge of the Probate Court.

Amending Article VIII, Sec. 2, authorizing the setting aside of a revolving fund of not over 250,000 from the school and swamp land funds to be used in clearing such lands and improving them by roads, ditches and firebreaks.

Amending Article VIII, Sec. 6, authorizing the investment and loaning of school funds on improved farm lands within the state.

Amending Article IX, authorizing the legislature to provide by law for the protection and regulation of all public waters and rivers, and for the mining and sale of minerals situated therein.

Missouri.—To be submitted in November, 1916:

Amending Art. IV, Sec. 47, empowering the legislature to provide by law for the pensioning of the deserving blind.

Montana.—To be submitted in November, 1916:

Amending Art. XII, Sec. 2, authorizing the legislature to exempt from taxation evidences of debt secured by mortgages of record upon real or personal property.

Amending Art. XII, Sec. 15, giving the State Board of Equalization power to equalize the assessments of property and to do all things necessary to secure equitable valuation of taxable property among the counties and between different classes of property and individuals.

Nevada.—To be submitted in November, 1916:

Amending Art. IX, Sec. 3, changing the state debt limit from $300,000 to one per cent. of the assessed valuation.

Amending Art. XI, Sec. 3, relating to the use of certain revenues for educational purposes.

New Jersey.—Submitted Oct. 19:

Amending Art. II, extending the suffrage to women. Defeated, 133,282 for, 184,390 against.

Amending Art. IV by adding Sec. 9, authorizing the state, counties and municipalities to condemn property in excess of actual requirements for public purposes. Defeated, 125,206 for, 173,755 against.

Amending Art. IX, prescribing procedure for the amendment of the constitution and prohibiting the re-submission of rejected amendments within a period of five years. Defeated, 137,092 for, 162,108 against.

New York.—The Constitutional Convention authorized by the voters on April 7, 1914 (*A. Y. B.*, 1914, p. 206) assembled at Albany on April 6 and adjourned on Sept. 10. The proceedings of the Convention are discussed at length in Department II and references to particular amendments proposed occur in various other departments of this issue (see Index). The amendments proposed by the Convention, exclusive of merely textual alterations and the elimination of obsolete matter, are here summarized, the references being to the numbering of articles and sections in the existing constitution:

Article I, Sec. 6.—Permitting a defendant charged with a crime punishable by not more than five years' imprisonment voluntarily to waive indictment and trial by jury, granting the defendant at least one appeal in every criminal case, and securing to every person the equal protection of the laws.

Article I, Sec. 7.—Providing that damages in condemnation proceedings shall be fixed by the supreme court without a jury, or by one or more supreme court commissioners, or in the non-metropolitan districts by three commissioners; requiring the payment of damages before the taking of property by civil divisions of the state; permitting the drainage of swamp lands on the same terms as agricultural lands and authorizing the assessment of the expense of drainage improvements against the property benefited thereby; and authorizing cities to condemn real property within an abandoned street or highway.

Article I, Sec. 15.—Abolishing certain Indian courts, vesting their jurisdiction in the state court and applying to the Indians all general laws of the state except as provided by Federal laws and Federal and state treaties.

Article I, Sec. 19.—Authorizing the legislature to enact a law providing for the compensation of workmen for occupational diseases.

Article II, Sec. 4.—Regulating the registration of voters and authorizing the enactment of laws to permit the registration in advance of the regular days of voters engaged in a vocation which will occasion their absence from the county during the regular days of registration.

Article III, Sec. 4.—Substituting the Federal census for the state enumeration as the basis for fixing the boundaries of Senate districts, and providing for reapportionment in the year following the tabulation of each Federal census beginning with that of 1920.

Article III, Sec. 5.—Providing for the apportionment of members of the Assembly on the basis and at the time prescribed for the readjustment of Senate districts, and enabling the apportionment of Assembly districts in New York City to be made separately for each county by the members of the Board of Aldermen elected from the county.

Article III, Sec. 6.—Increasing the salary of members of the legislature to $2,500 per annum and allowing them actual railroad fare between their homes and the capital once each week during sessions of the legislature.

Article III, Sec. 7.—Eliminating this section, thus making members of the legislature equally eligible with other citizens for any public office.

Article III, Sec. 8.—Eliminating the provision making Federal and city employees ineligible to the legislature.

Article III, Sec. 10.—Making the speaker of the Assembly a constitutional officer and defining the circumstances in which the temporary president of the senate becomes or acts as lieutenant-governor.

Article III, new Section (numbered 10).—Empowering the legislature of its own motion to convene for the removal of a judge of the Court of Appeals or justice of the Supreme Court, and the Assembly of its own motion to convene for the purposes of impeachment.

Article III, Sec. 11.—Directing the two houses of the legislature to keep and promptly publish records of their debates.

Article III, Sec. 15.—Prohibiting the passage of any bill by the legislature until the lapse of three days after the last amendment and the final reprint of the bill.

Article III, Sec. 18.—Prohibiting the enactment of any private or local bill granting the right to prove any claim against the state or against any civil division thereof or authorizing any civil division to allow or pay any claim.

Article III, Sec. 19.—Prohibiting the legislature from auditing or allowing any private claim or account against a civil division of the state.

Article III, Sec. 20.—Prohibiting the appropriation of money for the construction or improvement of public works by the state until plans and estimates have been filed with the Secretary of State by the Superintendent of Public Works.

Article III, Sec. 21.—Making all appropriations expire at a definite date, one year and three months after the close of the fiscal year in which they were made, and changing the end of the fiscal year to June 30.

Article III, Sec. 25.—Eliminating this section, to prevent a minority of either house of the legislature from defeating by mere absence the enactment of financial measures which have the assent of a majority of the members.

Article III, Sec. 26.—Authorizing the legislature to establish by general laws different forms of government for counties outside New York City, between which the electors may choose.

Article III, Sec. 27.—Authorizing the legislature to transfer to county officers powers and duties now exercised by town authorities relating to highways, public safety and the care of the poor.

Article III, Sec. 28.—Prohibiting the grant of extra compensation to any public officer, agent or contractor by the state or any civil division thereof.

Article III, new section (numbered 29).—Empowering the legislature to regulate or prohibit manufacturing in tenement houses.

Article IV, Sec. 1.—Increasing the annual salary of the governor to $20,000.

Article IV, Sec. 7.—Defining in detail the succession to the office of governor and providing that a vacancy in the office of lieutenant-governor occurring three months or more before a general election shall be filled at that election.

New Article (numbered V).—Providing for a budget of expenditures (see XIV, *Public Finance*).

Article V.—Eliminating this entire article and substituting new provisions prescribing the civil departments in the state government and the duties, terms and mode of election or appointment of state officers, and providing for a "short ballot" (see II, *The New York State Constitutional Convention;* and *State Administration, supra.*)

New Article (numbered VII.)—Prescribing the duties and powers of the department of conservation over forests, fisheries and water supplies. This article contains also Article VII, Sec. 7, to which is added a section requiring the legislature to make annual provision for the purchase of real property within the Adirondack and Catskill Parks, the reforestation of lands and the making of boundary and valuation surveys.

Article VI.—Reorganizing the judicial system extensively to expedite and reform the administration of justice (see II, *The New York State Constitutional Convention*), and authorizing the enactment of laws to provide for the Torrens system of registration and guaranty of titles to real property.

Article VII, Sec. 2.—Providing that a state debt for temporary purposes only may be created by law within the amount and for the objects of an existing appropriation, in anticipation of taxes and revenues, but must be paid from such taxes and revenues within a year from its creation.

Article VII, Sec. 4.—Substituting the serial-bond system for the sinking-fund system for the repayment of state bond issues, providing for such repayment in equal annual instalments and limiting the period of bond issues to the probable life of the work or object for which the debt is contracted.

Article VII, Sec. 5.—Providing for accurate contributions to the sinking funds for debts heretofore contracted.

Article VII, Sec. 8.—Extending the prohibition against the sale, lease or other distribution of the Erie and other canals so as to embrace canal terminals and providing that the abandonment, sale or other distribution of canals or canal property shall be only pursuant to general laws.

Article VII, Sec. 11.—Directing the legislature to provide annually appropriations necessary for interest, instalments of principal, and contributions to existing sinking funds.

Article VII, Sec. 12.—Authorizing the issue of highway bonds in the same manner as the other bonds of the state.

Article VII, new section (numbered 8).—Making certain moneys apportioned among certain counties for the improvement of highways available for the construction and improvement of highways outside of such counties.

New Article (numbered X).—Prohibiting the surrendering or contracting away of the power of taxation and the exemption of any property from taxation except by general laws passed by a two-thirds vote of all the members of each house, directing the legislature to provide for the supervision, review, and equalization of assessments, and authorizing the legislature to provide for the assessment by state authorities of all the property of designated classes of public-service corporations.

Article VIII, Sec. 10.—Enabling the cities of Buffalo and Rochester to exclude water bonds in ascertaining debt limits.

Article VIII, new section (numbered 12).—Requiring the legislature to provide that hereafter cities and civil divisions of the state shall issue serial bonds only and that local debts may not

be contracted for a longer period than the probable life of the work or object for which created.

Article VIII, Sec. 11.—Continuing the management and fiscal control of the state hospitals for the insane under the jurisdiction of the State Hospital Commission.

Article XI, Secs. 4, 5 and 6.—Harmonizing the provisions relating to the National Guard with the requirements of the Federal law and existing state statutes.

Article XII, Sec. 1.—Requiring the legislature to provide by general laws for the organization of new cities to secure them municipal home rule, and except as to cities having more than 100,000 population to restrict the powers of taxation and assessment to prevent abuses.

Article XII, new section (numbered 3).—Providing for municipal home rule (see VII, *Municipal Home Rule*).

Article XII, Sec. 2.—Authorizing the legislature to delegate to cities powers of legislation not surrendered by the general grant of power in the above amendment, and prohibiting the passage of any law relating to the property, affairs or municipal government of any city excepting such as is applicable to all the cities of the state without classification or distinction.

Article XIV, Sec. 1.—Providing for the consideration of amendments to the constitution in joint session of the two houses of the legislature, and requiring amendments to be printed at least five days before final action.

Article XIV, Sec. 2.—Providing for the submission of the question of holding a constitutional convention every 20 years.

Article XIV, new section (numbered 3).—Permitting the validity of an election upon any constitutional amendment or any other question submitted to the electors under the constitution to be contested by any elector in an action brought in the supreme court.

Article XIV, Sec. 3.—Providing for the embodiment of the woman's suffrage amendment submitted at the election of Nov. 2, if approved, and providing for the repayment of the canal bond issue authorized at the same election in eight annual instalments.

The revised constitution was submitted to the voters on Nov. 2 in three separate propositions, all of which were defeated. These three questions and the official returns of the votes thereon were as follows:

1. Shall all of the revised constitution submitted by the constitutional convention not included in questions 2 and 3 be approved? For, 400,423; against, 910,462.

2. Shall the proposed amendments submitted by the constitutional convention to sections 2, 3, 4 and 5 of Article III, relating to legislative apportionment, be approved? For, 371,588; against, 891,337.

3. Shall the new article X submitted by the constitutional convention, relating to taxation, be approved? For, 346,922; against, 924,571.

At the same election the following amendments proposed by the legislature were submitted and defeated by the vote indicated.

Amending Article II, Sec. 1, extending the suffrage to women. For, 553,348; against, 748,832.

Amending Art. VII, Sec. 4, permitting the legislature to alter the rate of interest upon debts incurred for some specific work or object authorized by act of the legislature and ratified by the people. For, 430,423; against, 725,784.

North Carolina.—To be submitted in November, 1916:

Amending Art. II, by adding Sec. 29, restricting local, private and special legislation.

Amending Art. IV, Sec. 11, providing for the appointment of emergency judges to prevent delay in trials.

Amending Art. VIII, Sec. 1, prohibiting the creation of corporations by special act.

Amending Art. VIII, Sec. 4, imposing on the legislature the duty of providing general laws for organization of cities, towns and incorporated villages.

North Dakota.—To be submitted in November, 1916:

Amending Art. XIX, Sec. 216, to provide for the establishment of a State Normal School at Dickinson.

Amending Art. XIX, Sec. 216, to provide for the establishment of a State Hospital for the insane at a place to be selected by the legislature.

Ohio.—Submitted Nov. 2:

Amending Art. X, Sec. 2, fixing the terms of all county officers at four years, providing for their election quadrennially, and applying the amendment to incumbents. Proposed by initiative petition. Defeated, 207,435 for, 604,463 against.

Amending Art. XII, Sec. 12, exempting from taxation bonds issued on or after Jan. 1, 1916, by the state or any minor civil division thereof. Defeated, 337,124 for, 401,083 against.

Amending Art. XV, Sec. 9, prohibiting the manufacture or sale of intoxicating liquors for beverage purposes within the state. Proposed by initiative petition. Defeated, 484,969 for, 540,377 against.

Amending Art. XVI, Sec. 4, limiting elections on twice-defeated constitutional proposals and establishing restrictions on the use of the initiative and referendum. Proposed by initiative petition. Defeated, 417,384 for, 482,275 against.

Oklahoma.—To be submitted in November, 1916:

Amending Art. II, Sec. 19, prescribing a jury of 12 in capital cases, of eight in civil and criminal cases other than capital in courts of record other

than county courts, and of six in county courts not courts of record; and providing that three-fourths of the jury may return a verdict in civil and all criminal cases less than felonies.

Amending Art. VII, Sec. 7, relating to the appointment and duties of the clerk of the Supreme Court.

Repealing Art. X, Sec. 12*a*, relating to taxes collected for maintenance of schools.

Amending Art. X, Sec. 21, authorizing the creation of a State Tax Commission of three members and prescribing its powers and duties.

Amending Art. X, Sec. 27, authorizing municipalities with the approval of three-fifths of the taxpaying voters to incur indebtedness for the purpose of constructing and purchasing public utilities.

Amending Art. XXIII, Sec. 7, relating to the compulsory compensation of workmen.

Amending the constitution, consolidating the Supreme Court and the Criminal Courts of Appeals in the Supreme Court of Oklahoma and prescribing its organization and procedure.

Amending the constitution, relating to the original jurisdiction of the district courts in all civil and criminal cases.

Oregon.—To be submitted in November, 1916:

Repealing Art. II, Sec. 6, relating to the voting of negroes and Chinese.

Amending Art. V, Sec. 15, empowering the Governor to veto single items in appropriation bills.

Amending Art. IX by adding Section 1b, exempting from taxation, except for state purposes, until Jan. 1, 1935, all vessels of 50 tons or more, whose home ports of registration are in the state of Oregon.

Pennsylvania.—Submitted Nov. 2:

Amending Art. III, Sec. 21, empowering the General Assembly to enact laws relating to employers' liability and the compensation of workmen for injuries and occupational diseases. Adopted, 487,135 for, 174,168 against.

Amending Art. VIII, Sec. 1, extending the suffrage to women. Defeated, 385,348 for, 441,034 against.

Amending Art. IX, Sec. 8, authorizing the city of Philadelphia to increase its indebtedness for certain specific purposes. Adopted, 361,188 for, 191,004 against.

Amending the constitution to authorize the enactment of laws providing for the register and guarantee of land titles by the state or by counties. Adopted, 353,686 for, 178,567 against.

Rhode Island.—To be submitted in November, 1916:

Amending Art. XVII, Sec. 1, authorizing the state and municipalities to condemn property in excess of actual requirements for highway or park purposes.

Tennessee.—A proposal of the legislature for the call of a constitutional convention will be submitted at the regular election in August, 1916.

Texas.—Submitted July 24:

Amending Art. III, Sec. 52, authorizing the issuance of bonds for public improvements and the levy of taxes therefor. Defeated, 32,772 for, 97,546 against.

Amending Art. V, Sec. 2, providing that the Supreme Court of the state shall consist of a chief justice and four associate justices, and prescribing their qualifications, tenure of office, and compensation. Defeated, 30,957 for, 98,979 against.

Amending Art. VI, Sec. 2, authorizing qualified voters to vote in precincts other than those of their residence under certain conditions. Defeated, 42,690 for, 90,994 against.

Amending Art. VII, Secs. 10-15, providing for the separation of the University of Texas and the Agricultural and Mechanical College of Texas and an equitable division of the university lands. Defeated, 50,398 for, 81,658 against.

Amending Art. VII by adding Sec. 3b, authorizing the legislature to provide for the creation of a students' loan fund in each county in connection with the public schools thereof. Defeated, 27,529 for, 102,627 against.

Amending Art. VIII, Sec. 9, authorizing the levy of a special road tax not exceeding 50 cents on each $100 of valuation in any county or minor civil division, when approved by a majority of the qualified electors voting at an election held for that purpose. Defeated, 37,861 for, 93,063 against.

Utah.—To be submitted in November, 1916:

Amending Art. VII, Sec. 17, relating to the duties of the auditor and of the treasurer.

Amending Art XIII, relating to revenue and taxation.

Washington.—To be submitted in November, 1916:

Amending Art. VI, Sec. 1, requiring that voters in elections for the authorization of bond issues shall be taxpayers.

West Virginia.—To be submitted in November, 1916:

Amending Article IV, Sec. 1, extending the suffrage to women.

Amending Article VIII, Sec. 23, prescribing the mode of election, term and compensation of commissioners of the county courts.

Wyoming.—To be submitted in November, 1916:

Amending Art. VII, Sec. 6, authorizing the investment of funds held in trust by the state for educational purposes in first mortgages on farm lands.

Amending Art. XVI by adding Sec. 9, authorizing the state to undertake the construction and improvement of roads and certain other works of internal improvement without special authorization of the electors.

COUNTY GOVERNMENT

CLINTON ROGERS WOODRUFF

County government has only recently received constructive attention at the hands of publicists and reformers. Heretofore, along with state government, it has been one of the neglected factors in our governmental machinery. The subject, however, has been brought quite conspicuously to the front during 1915 through the studies made for the New York Constitutional Convention by the city chamberlain and commissioner of accounts of New York; by LeRoy Hodges in connection with the proposed reorganization of county government in Virginia; by the National Short Ballot Organization in connection with its own campaign; and through the studies of the National Municipal League's committee on city and county consolidation. Herbert R. Sands of the New York Bureau of Municipal Research has also made an extensive study of county government throughout the country which is to be published in 1916.

New York.—A study of county government within the city of New York and a plan for its reorganization were prepared for the New York Constitutional Convention by Henry Bruere and Leonard Wallstein. It not only thoroughly analyzed the anomalous condition existing in the city of Greater New York, where there are various county organizations within the city, but suggested a number of concrete reforms. These received but scant consideration at the hands of the Convention, which did, however, submit to the people an amendment authorizing the legislature to establish optional forms of county government, any one of which might be adopted by the vote of the people in the county affected. The movement in New York was greatly stimulated by the local efforts of the Westchester County Research Bureau and the appointment of official commissions to investigate county government and suggest new forms for Westchester and Nassau counties respectively. These official commissions were appointed by the county boards of supervisors under a general law passed in 1914.

Virginia. — The reorganization of county government in Virginia is receiving the attention of publicists. LeRoy Hodges of Petersburg has prepared a series of bulletins setting forth the present conditions in county government in that state and the lines along which reform must come. Mr. Hodges is authority for the statement that "instead of recognizing the fundamental principle of efficient democracy that the least government is the best government, the present constitution shackles the counties of Virginia with a prescribed form of government, which in the majority of them provides a job for about one out of every ten voters, and virtually places the selection of these job-holders in the hands of the office-seekers themselves." He accordingly recommends that the counties be given the right to constitute their own government, and recommends a government organized along the lines of the controlled-executive plan. This provides for a county board of supervisors consisting of five members to be elected from the county at large. This body names one of its own members chairman, and in order that it may be truly representative of the people of the county, members should be elected by proportional representation. Retaining entire legislative powers, this board is to vest its executive functions in a single administrative officer known as the county manager.

Kansas. — The county-commission form of government recommended by Governor Hodges of Kansas has made but little progress. Several bills providing for this form were introduced in the 1915 session of the legislature, but none was passed.

Washington.—Commission form of government for counties such as is used in some cities in the state of Washington was approved by the 1915 legislature, but no definite action was taken.

California.—An amendment extending and improving the county home rule in California counties went down with the other amendments submitted at the special election on Oct. 26.

VII. MUNICIPAL GOVERNMENT

CLINTON ROGERS WOODRUFF

MUNICIPAL HOME RULE

New York.—The movement for home rule for New York cities, which has been vigorously pressed by the Mayors' Conference and the City Club and the Citizens' Union of New York City, resulted in the adoption by the New York State Constitutional Convention (see II, *Popular Government*) of a home-rule amendment to the proposed new Constitution submitted to the electorate on Nov. 2. This amendment provided for local charter drafting and for enlarged local powers, including new limitations on the legislature.

With regard to local charter drafting, the amendment stipulated that at the general election of 1917, and every eighth year thereafter, unless the city charter after its first revision should provide otherwise, every city should submit to the electors either at a general or special election the question: "Shall there be a commission to revise the charter of the city?" In the event of the answer being affirmative, the city (excepting New York) should choose seven commissioners to revise its charter. In New York City the number of commissioners was to be 16. The charter so drafted was to be submitted to the voters at the next ensuing general election or at a special election to be called for the purpose. If a majority voted in the affirmative, then the charter was to be submitted to the legislature during the first week of its session in January of the year following popular ratification. If it was not disapproved by the legislature prior to July 1 of that year, it should become effective.

In the matter of powers, the amendment provided that

> every city shall have exclusive power to manage, regulate, and control its property, affairs and municipal government, subject to the provisions of this constitution, and subject further to the provisions of the general laws of the state, of laws applying to all the cities of the state without classification or distinction, and of laws applying to a county not wholly included within a city establishing or affecting the relation between such a county and a city therein.

Then the amendment proceeded to enumerate the powers thus actually granted to the municipalities. These included the power to organize and manage all departments, bureaus, and other divisions of its municipal government; to regulate the powers, duties, qualifications, mode of election, number, terms of office, compensation, and method of removal of all city officers and employees; to regulate the compensation of all officers not chosen by the voters; to revise and enact amendments to its charter in relation to its property, affairs or municipal government, and to enact amendments to any local or special law in relation thereto, in accordance with the provisions of the amendment.

The legislative body was also given power to enact charter amendments subject to the approval of the mayor and of the board of estimate and apportionment, if such existed, with the proviso that any such amendment which changed the framework of the government of the city or modified restrictions as to issuing bonds or contracting debts should be submitted to the legislature for approval or rejection if it so desired.

The proposed constitution was defeated by a heavy majority in the election of Nov. 2 (see II, *Popular Government*).

Florida.—The "municipal-freedom" act passed by the Florida legislature of 1915 granted a considerable meas-

ure of home rule. While the act does not make it possible for any city or town to enlarge its corporate powers beyond the limitations prescribed by law, each city is given practically complete powers over the organization of the city government, including the power to alter the number, powers, duties, compensation, terms of office, and the time and manner of election or appointment of any or all officers and boards, whether created by or recognized in state legislation or ordinances. The charter so adopted may also abolish any such officers or boards.

Connecticut.—The Connecticut legislature of 1915 enacted a law providing that any town, borough or city shall have authority to draft a charter for its government, or to amend its present charter under the conditions prescribed in the act. The bill was advocated by the Connecticut Chamber of Commerce as a preliminary step to complete home rule.

Ohio.—Two important cases involving the provisions of Cleveland's home-rule charter (*A. Y. B.*, 1913, p. 204; 1914, p. 211) have been decided by the Ohio Supreme Court, one in June and the other in July, upholding the home-rule provisions. The first had to do with the power of the city to determine the organization of its sinking-fund commissions. The second case had to do with the matter of frontage consents in the construction or extension of street railways. The Ohio law provides that, before a street railway may be constructed or extended along any street, the consent of the owners of a majority of the foot frontage of property thereon shall be secured; but the Supreme Court affirmed the charter provisions and Cleveland's right to proceed under its charter, rather than under the state law.

Michigan.—Two acts were passed by the Michigan legislature of 1915, one to amend the home-rule law permitting cities to place justices of the peace upon a salary basis in lieu of fees; and the other providing for the acquisition of street-railway properties by purchase, the price thereof to be paid from the earnings.

Delaware.—Wilmington has obtained from the Delaware legislature home rule in the matter of issuing bonds for improvement purposes. Without consulting that body, it may issue bonds up to ten per cent. of the total of the city assessment.

Maryland.—The amendment to the Maryland constitution designed to give Baltimore a measure of home rule (*A. Y. B.*, 1914, pp. 204, 210) was adopted by the voters in the election of Nov. 2.

New Jersey.—A proposed home-rule amendment to the constitution of New Jersey failed of passage at the 1915 session of the legislature, largely because of its form, rather than because of any decided opposition to home rule.

Pennsylvania. — Several bills designed to give local communities larger control over public utilities, in the shape of amendments to the public-utility law of 1913, were defeated in the Pennsylvania legislature of 1915 (see also XI, *Public Service Commissions*).

Illinois.—The 1915 legislature of Illinois adjourned without passing any home-rule bill, although several were up for consideration. One provided for council control of franchises, and represented the wishes of the Chicago City Council; the other provided for a city commission to be appointed by the mayor of the city of Chicago and represented partly the wishes of the new administration and partly the efforts of the utilities companies to cloud the situation. (See also XI, *Public Services.*)

Wisconsin.—Another effort to secure the passage of a constitutional amendment providing for home rule for cities failed in the Wisconsin legislature because of a disagreement between the Senate and the Assembly. The former favored a resolution granting home rule with only the constitution and the general laws of the state as restrictions. The Assembly believed this plan to be too liberal and adopted a resolution which would have given the legislature power to restrict any legislation proposed by cities.

Iowa.—The Iowa Senate of 1915 defeated by one vote the Arney bill for home rule for cities and towns. The bill was one which was intended to give to cities and towns greater

freedom in the handling of their business affairs and had the endorsement of the League of Iowa Municipalities (*A. Y. B.*, 1914, p. 211).

Kansas.—The legislative committee of the Kansas League of Municipalities recommended that the 1915 legislature submit an amendment to a vote of the people changing the constitution of the state so as to make possible the passage of a home-rule law. The legislature, however, refused to pass the measure.

Governors' Recommendations Concerning Home Rule.—According to Governor Holcombe of Connecticut, too much of the time of the General Assembly is taken up with matters relating to administration of local affairs; a larger degree of local self-government under a general law was therefore recommended for municipalities. Governor Curtis of Maine recommended that mandatory laws enacted through the influence of party politicians should not be allowed to become effective until at least they are accepted by the municipal officers. Among questions suggested by Governor Walsh of Massachusetts as most persistently pressing for constitutional authority is the "right of cities and towns to deal in necessaries of life in times of public distress." He was opposed to state control of municipal functions. He also recommended that the power to approve or reject appointees of the mayor of Boston be withdrawn from the state Civil Service Commission. Governor Fielder of New Jersey is opposed to legislation which compels municipal expenditure for higher salaries or for any other purpose without requiring consent of municipal governing bodies.

CHARTER REVISION

New Charters Proposed.—The charter commission of Newark, N. J., has prepared a charter which provides for the election of a mayor for a term of four years at a salary of $10,000 annually, and for a council of five members elected for similar terms with salaries of $3,500 annually, except that the president of the council, who shall be elected as such, shall receive $4,000 annually. These are the only elective officials. The terms of the councilmen first elected shall be two for four years, and three for two years.

Newport, R. I., is considering revising the "Newport plan." The principal proposal provides for the selection of expert administrators, the head of whom, called the city administrator, is to have $10,000 a year and hold office during good behavior. Another is the extension of the municipal vote to all taxpayers, resident or non-resident, man or woman, paying on as much as $500 of city property, but no present voter is to be deprived of a vote.

Los Angeles has a commission at work drafting a new charter, as have also Richmond, Va., and Grand Rapids, Mich.

The bill for uniform city charters in Massachusetts prepared by a special senatorial committee became a law at the 1915 session of the Massachusetts legislature. It offers to Massachusetts cities the option of a number of forms of government including commission and commission-manager forms.

Commission Government.—Birmingham, Ala., has amended its charter so as to provide for a commission of five instead of three. Montgomery, Ala., changed the size of its commission from five to three. Buffalo, which adopted the commission form of government in 1914, finally elected its first commission on Nov. 2 after a six years' campaign.

The following is a list of the cities adopting commission government since the list published in the YEAR BOOK for 1914 (p. 214):

	Population, 1910
Mechanicsville, N. Y.	6,634
Saratoga Springs, N. Y.	12,693
Asbury Park, N. J.	10,150
Bayonne, N. J.	55,545
Belleville, N. J.	9,891
Bradley Beach, N. J.	1,807
Cape May, N. J.	2,471
Hoboken, N. J.	70,324
New Brunswick, N. J.	23,388
Coatesville, Pa.	11,084
Connellsville, Pa.	12,845
Dubois, Pa.	12,623
Lock Haven, Pa.	7,772
Asheville, N. C.	18,762
Lincolnton, N. C.	2,413

	Population, 1910
Wilmington, N. C.	25,748
Rome, Ga.	12,099
Apalachicola, Fla.	3,065
Orange Park, Fla.	372
Coal City, Ill.	2,667
Effingham, Ill.	3,898
Highland Park, Ill.	4,209
Joliet, Ill.	34,670
Lincoln, Ill.	10,892
Paris, Ill.	7,664
Princeton, Ill.	4,131
Rockford, Ill.	45,401
Sterling, Ill.	7,467
Eaton Rapids, Mich.	2,094
Grand Rapids, Mich.	112,571
Jackson, Mich.	31,433
Munising, Mich.	2,952
Aurora, Mo.	4,148
Springfield, Mo.	35,201
Two Harbors, Minn.	4,990
Marmath, N. D.	790
Springfield, S. D.	675
Cynthiana, Ky.	3,603
Harrodsburg, Ky.	3,147
Hopkinsville, Ky.	9,419
Middleboro, Ky.	7,305
Jackson, Tenn.	15,779
Lawrenceburg, Tenn.	1,687
Calvert, Tex.	2,579
Cleburne, Tex.	10,364
Brownsville, Tex.	10,517
Yoakum, Tex.	4,657
Helena, Mont.	12,515
Long Beach, Cal.	17,809
Napa, Cal.	5,791
Santa Monica, Cal.	7,847

According to the report prepared by the Bureau of the Census (June, 1915), there were at the close of 1914 81 cities out of 204 in the United States having an estimated population of over 30,000 which have adopted the commission form of government.

A series of untoward events in Nashville, Tenn., has served to raise the question as to the efficacy of commission government. As a result of the long years of mismanagement, the finances of the city are in an extremely bad shape. This, added to the criminal action of certain officials, has created a situation which called for the removal of some of the commissioners who were held to be primarily responsible. For a few days the city was placed by the courts in the hands of a receiver, but this action was vacated and the remaining commissioners given an opportunity to elect successors to those who had been removed. At the annual election commissioners were elected for the whole term. The advocates of the commission form of government do not regard the Nashville experience as an argument against the system. The conditions were deep seated and had been long continued. They point out that as they existed under the old form as well as under the new and were almost immediately discovered under the new, this fact must be credited to the commission form of government.

The City-Manager Plan.—An article on "How the Commission-Manager Plan is Getting Along" in the issue of the *National Municipal Review* for July, 1915, gives a comprehensive survey of the city-manager movement to date, with a discussion of the objections to and claims for the plan. The committee on municipal programme of the National Municipal League recommended at its Dayton meeting a commission-manager form of government. Three editions of this committee's report on the subject were issued during the year. The subject was also discussed in another report by a special committee of the League entitled, "The Commission Plan and Commission-Manager Plan of Municipal Government." A volume on *The City Manager: A New Profession*, by H. A. Toulmin, Jr., of Dayton, was published in the National Municipal League Series (New York, D. Appleton & Co.). In the April, 1915, issue of the *National Municipal Review*, L. D. Upson, formerly of the Dayton Bureau of Municipal Research, published a searching criticism of the shortcomings of Dayton's particular charter. He also published an article in the August, 1915, number of the *Political Science Review* on "The City-Manager Plan in Ohio."

Thirty-seven cities were added to the list of cities operating under a form of city-manager government during 1915, as compared with 33 in 1914 and 12 in 1913. The following is a complete list of the cities, with the names of the city managers so far as they have been appointed; those marked * adopted the system in the year 1915:

	Manager	Population, 1910
Norwood, Mass.	Clarence A. Bingham.	8,014
Farmington, Conn.		3,478
Stamford, Conn.*		28,836
Newburgh, N. Y.*	F. C. Alber	27,805
Niagara Falls, N. Y.	O. E. Carr	30,445
Grove City, Pa.	John S. Ekey	3,674
Titusville, Pa.	Herbert A. Holstein	8,533
Bristol, Va.	G. M. Warren	6,247
Charlottesville, Va.	A. V. Conway	6,765
Fredericksburg, Va*	R. Stuart Royer	5,874
Luray, Va.*	Walter Campbell	6,218

	Manager	Population, 1910
Portsmouth, Va.		33,190
Staunton, Va.	S. D. Holsinger	10,604
Charleston, W. Va.	B. A. Wise	2,662
Wheeling, W. Va.*		41,641
Durham, N. C.		18,241
Elizabeth City, N. C.*	J. C. Commander	8,412
Hickory, N. C.	S. C. Cornwell	3,766
Morgantown, N. C.	R. W. Pipkin	2,712
Thomasville, N. C.*	Frank D. Jones	3,877
Beaufort, S. C.*	H. G. Otis	2,486
Rock Hill, S. C.*	J. G. Barnwell	7,216
Sumter, S. C.		8,109
Lakeland, Fla.	Donald F. McLeod	3,719
Largo, Fla.	J. T. Sauls	291
St. Augustine, Fla.*	W. L. Miller	5,494
Johnson City, Tenn.	P. F. McDonald	8,502
Ashtabula, Ohio		18,266
Dayton, Ohio	Henry M. Waite	116,577
Kenmore, Ohio*		1,561
Sandusky, Ohio	Kenneth B. Ward	19,989
Springfield, Ohio	Chas. E. Ashburner	46,921
Westerville, Ohio*		1,903
Glencoe, Ill.	H. H. Sherer	1,899
River Forest, Ill.	(1)	2,456
Winnetka, Ill.	R. L. Fitzgerald	3,168
Horicon, Wis.	E. C. Redfield	1,881
Alpena, Mich.*		12,706
Benton Harbor, Mich.*		9,185
Big Rapids, Mich.	W. J. Fairbairn	4,518
Cadillac, Mich.		8,375
Grand Haven, Mich.*	E. M. Beck	5,856
Jackson, Mich.	Gaylord C. Cummin	31,433
Manistee, Mich.	Carl E. Ruger	12,381
Morris, Minn.	S. A. Siverts	1,685
Bloomfield, Iowa*	R. C. Bristow	2,028
Clarinda, Iowa	A. T. Wilson	3,832
Chariton, Iowa		3,794
Iowa Falls, Iowa	E. L. Marriage	2,797
Webster City, Iowa*		5,208
Abilene, Kans.	Kenyon Riddle	4,118
Mulberry, Kans.	John Marion	1,325
Clark, S. D.*	J. E. Smith	1,220
Bentonville, Ark.*	Edgar Masoner	1,956
Collinsville, Okla.	Claude Thorpe	1,324
Norman, Okla.*		3,724
Amarillo, Tex.	M. H. Hardin	9,957
Denton, Tex.	W. L. Foreman	4,732
San Angelo, Tex.*		10,321
Sherman, Tex.*	Karl M. Mitchell	12,412
Taylor, Tex.	Peter Schramm	5,314
Terrell, Tex.		7,050
Tyler, Tex.*		10,400
Durango, Colo.*		4,666
Montrose, Colo.	E. McDaniel	3,252
Roswell, N. M.*	W. M. Atkinson	6,172
Phoenix, Ariz.	R. A. Craig	11,134
Tempe, Ariz.*		1,473
Tucson, Ariz.	C. K. Clark	13,193
Snohomish, Wash.*	E. Colburn	3,244
La Grande, Ore.	F. J. Lafky	4,843
Alhambra, Cal.		5,021
Bakersfield, Cal.	Wallace M. Morgan	12,727
Glendale, Cal.	Thomas W. Watson	2,746
Holtville, Cal.	D. A. Starbuck	729
Inglewood, Cal.	(2)	1,536
San Diego, Cal.*	F. M. Lockwood	39,578
San Jose, Cal.*		28,946
San Rafael, Cal.*	W. A. Boland	5,934
Santa Barbara, Cal.*		11,659
Maisonneuve, P.Q.		11,220
Port Arthur, Ont.		18,684

[1] Voted back to old form.

[2] Abandoned.

EFFICIENCY, RESEARCH, AND BUDGETS

Municipal Efficiency. — Efficiency came in for a very considerable amount of discussion during the year on the part of the Efficiency Society, state and municipal efficiency commissions, and bureaus of municipal research. It became a local issue in Los Angeles. Director Jesse D. Burks and the members of the local commission, and those members of the city government who had criticized the results of their work, had a round-up during the few days preceding the municipal election in June, the outcome apparently being favorable to the director and the commission, who were able to show the immensity of the task they confronted a year ago and the really commendable progress they have made. Instead of the abolishment recommended by the president of the council, it is probable that there will be a reorganization and enlargement of the commission.

In Chicago the efficiency division was dropped from the Civil Service Commission by the new board (see V, *Civil Service*); but was immediately considered by the finance commission of the Council.

Bureaus of Municipal Research.—As usual the New York Bureau of Municipal Research has a long list of significant undertakings to its credit. It coöperated in the installation of an accounting system in the department of finance and other departments and in the formulation of a city budget, including an analysis of budget estimate and recommendations for the board of estimate. It coöperated also with the comptroller in organizing a centralized bureau for the preparation of payrolls, with the mayor in effecting centralized purchasing, with the commissioners of accounts in the preparation of standard forms for departmental reporting and in the reorganization of the paymaster's office, and with the Civil Service Commission in the reorganization of its methods and procedures, working out a plan of efficiency records. Reports were prepared for the New York State Constitutional Convention on the organization and functions of the city and county government, containing graphic charts of each unit of organization, with detailed description of the personnel employed, their salary cost, and the

duties performed by each individual, and a comparative report, prepared in coöperation with the department of finance, on the revenues and expenses of the city government, showing the expenditures grouped in accordance with the division of responsibility. The Bureau also coöperated with the bureau of standards in working out detailed specifications for personal service and standardization of positions and rates of compensation. In the way of scientific research, work was begun on the preparation of a series of handbooks dealing with the following subjects: civil servants' handbook; standard classification of objects of expenditure; standard classification of governmental functions; municipal functions; outlines for public roads; institutional accounting and reporting; cost accounting and reporting; payrolls and payroll methods and procedure; budget and budget procedure. In the police department the Bureau carried out the installation of a card record of complaints and a system of reports for the patrol force, and completed a study of the records of the department; and in the department of health, it made a study of typhoid epidemics and of food inspection.

The following is a list of the non-academic bureaus of municipal research, the official agencies being marked * :

Akron, Bureau of Municipal Research; director, F. L. Olson.
Baltimore, Bureau of State and Municipal Research; director, W. H. Maltbie.
Boston, Finance Commission *; counsel, John C. L. Dowling.
Chicago, Chicago Bureau of Public Efficiency; director, Harris S. Keeler.
Cincinnati, Bureau of Municipal Research; director, H. S. Morse.
Dayton, Bureau of Municipal Research; director, Chester E. Rightor.
Los Angeles, Efficiency Commission *; director, Dr. Jesse D. Burks.
Milwaukee, Bureau of Municipal Research;* director, John C. Davis.
Milwaukee, Milwaukee Citizens' Bureau of Public Efficiency; director, Thomas L. Hinckley.
Minneapolis, Bureau of Municipal Research; director, F. S. Staley.
New York City, Bureau of Municipal Research; director, Dr. F. A. Cleveland.
Philadelphia, Bureau of Municipal Research; director, Frederick P. Gruenberg.
Rochester, Rochester Bureau of Municipal Research; director, Leroy E. Snyder.
Springfield, Mass., Bureau of Municipal research; director, C. P. Dustin.
White Plains, N. Y., Westchester County Bureau of Municipal Research; director, O. G. Cartwright.
Toronto, Bureau of Municipal Research; director, Horace L. Brittain.

Agencies of instruction in the form of bureaus of municipal research and reference have been established at the following colleges and universities: College of the City of New York, Grinnell College, Whitman College, Columbia University, Harvard University, Western Reserve University, Indiana University, and the Universities of California, Cincinnati, Illinois, Kansas, Michigan, Minnesota, Oregon, Texas, Toledo, Washington, and Wisconsin.

Salary Standardization in Pittsburgh.—The mayor's bureau of costs and the civil-service efficiency division of the Pittsburgh city government, with the assistance of the New York Bureau of Municipal Research, have been making an intensive study relative to standardizing the rates of compensation of the city employees. Instead of permitting this work to lapse, as have some of the cities which began standardization of salaries, the city council retained a representative of the New York Bureau to sit with it during the period of making the 1915 budget, so that it might put into immediate effect the recommendations with respect to salary changes. In June, 1915, the council passed a resolution adopting the recommendations of the civil-service commission, which in turn embodied the recommendations of the experts who had studied the subject. This places Pittsburgh in the front rank in such matters.

Payroll Revision in New York.—City Chamberlain Bruere of New York, coöperating with the department of finance and the Bureau of Municipal Research, is working out a system of municipal payrolls. All the forms of the many departments will be standardized to 17 in. by 14 in. in size. The size adopted will admit of payroll preparation by any of the standard mechanical devices used in this line of work. Addressograph plates will contain for each employee the name, amount of monthly or half-monthly salary stated in figures, and

the same amount stated in words. It is planned to establish a division in the department of finance where the payrolls and employees' checks of all departments in the city will be prepared, instead of having each department prepare its own as at present.

Not the least important part of the plan contemplates the use of signature cards for per diem employees, so that when paying men in the field, instead of being compelled to wait for each man to sign his name in the roll, cards will be distributed immediately upon the arrival of the paymaster's automobile and quickly signed by the gang or group to be paid. As fast as signed the men will fall in line and exchange their cards for the money due them. The same cards can be used for six months without rewriting. Each per diem employee will have a number which will appear on the badge to be worn on his coat. This same number will also appear on the card and on the payroll.

Budgets.—Among the leading cities that are now considering a scientific budget are: New York, Boston, Milwaukee, Philadelphia, Minneapolis, Dayton, Los Angeles, Schenectady, Rochester, Reading, Pittsburgh, Cleveland, St. Louis, and Fort Smith, Ark. Boston appointed a budget committee, whose duty it was to make a report upon recommended budget changes. Philadelphia's council has under consideration a better financial statement in connection with the budget estimates. (See also XIV, *Public Finance.*)

MUNICIPAL ACCOUNTING

Progress of Improvement.—Among the more important developments during 1915 in the field of municipal accounting have been the adoption by a score of cities of modern accounting systems, including the establishment of liability and revenue accounts, the control over accruals and financial stationery, the introduction of expense and cost accounts and the simplification of accounting forms and procedure; the establishment of such accounts as would produce comprehensive balance sheets, fund statements and operating statements by some of the more important cities of the United States; the recognition of the administrative handicaps imposed by the highly segregated act of appropriation and the resultant agitation by budget reformers for the allotment scheme of budget making and administration; and the inclusion in recent modern charters of adequate provisions for proper accounting and budget systems.

The Massachusetts Bureau of Statistics, Charles F. Gettemy, director, which has been one of the leading factors in the United States and the chief one in Massachusetts to secure uniform municipal accounting, published in 1915 a sketch of its history, organization, and functions and a list of its publications and illustrative charts.

The California State Board of Control has embarked on an effort to introduce uniform accounting and bookkeeping in the counties of the state, beginning with Los Angeles County.

Philadelphia.—Controller John M. Walton of Philadelphia issued late in 1913 a "Manual of Accounting, Reporting and Business Procedure," which marked the completion of the first step in a systematic programme of reorganization upon which he has been working for four years with the coöperation of the Bureau of Municipal Research. The purpose is "to prescribe a comprehensive and orderly method of accounting and reporting for Philadelphia; and to furnish, with respect to municipal business, the information regarded by bankers and business men as absolutely essential in the administration of private business." The accounting procedure provides for the detail and summary exhibition of three fundamental groups of financial data: (1) the proprietary relations—the assets, liabilities and reserves, and the net current assets as well as net investment of the city; (2) the operating results—the revenues accrued, expenses incurred, and the excess of the one over the other; and (3) the funding relations—the authorizations to incur liabilities and spend money and the character and condition of the funded

resources available for meeting them. The accounting devices for accomplishing this threefold purpose are standardized in accordance with the best modern practice and are systematically described under six main headings: (1) "Documents," containing the original and permanent evidence of each transaction; (2) "Registers and Schedules," for each class of documents, serving as numerical indices to the original files as well as secondary records of the facts contained in the original documents; (3) "Detail Ledgers," for analyzing and classifying each general class of accounts; (4) a "General Ledger," to which, through a general journal, totals from the registers are periodically posted, thus providing accounts which control the accuracy of detail ledger accounts and summary reports; (5) "Detail Reports," containing schedules of balances and totals from detail ledgers to be transmitted to department heads and the central accounting office; (6) "Summary Reports," in the form of balance sheets and operation accounts to be regularly drawn from the general ledger. This manual is based, to a considerable extent, upon the more voluminous accounting manual published four years ago by Controller Metz of New York; but the later manual more nearly than the first meets the accounting problems which the ordinary American municipality is now attempting to solve.

Springfield, Mass.—Four changes in the city accounting and budget-making system are to be adopted in Springfield as the result of a conference between the financial officers, the chief statistician of the state Bureau of Statistics and officials of the local research bureau. The first change provides that in the general ledger property and liability accounting of appropriations and other funds shall be kept. The second provides that expense ledgers shall be maintained so that operating statements may be prepared showing actual expenses and revenue accruals, the expenditures being computed along functional and subfunctional lines and showing the main classification of commodities consumed and services obtained. The third change provides that appropriations shall be made according to functions, but based on detailed estimates of functions and subfunctions as is done at present. The fourth change provides that standard estimate forms and standard detailed classification of commodities shall be adopted.

CITY PLANNING

City-planning Commissions. — The following is a list of the municipalities in which city-planning commissions are now at work:

California: Alameda, Berkeley, Oakland, San Francisco, San Rafael.
Connecticut: Bridgeport, Hartford, New Britain, New Haven, New London, West Hartford.
Illinois: Chicago.
Kansas: Kansas City.
Kentucky: Louisville, Paducah.
Louisiana: Shreveport.
Maryland: Baltimore, Cumberland.
Massachusetts: Adams, Amherst, Arlington (town), Attleboro, Beverly, Boston, Brockton, Brookline (town), Cambridge, Chelsea, Chicopee, Clinton (town), Everett, Fitchburg, Framingham (town), Gardner, Gloucester, Holyoke, Hudson (town), Lawrence, Lowell, Malden, Medford, Melrose, Newburyport, Newton, Northampton, Pittsfield, Plymouth (town), Quincy, Salem, Somerville, Springfield, Taunton, Wakefield (town), Walpole (town), Waltham, Watertown (town), Wellesley (town), Westfield (town), Weymouth (town), Winthrop (town), Winchester (town), Worcester, Woburn.
Michigan: Detroit.
Minnesota: St. Paul.
Missouri: St. Louis.
Nebraska: Lincoln.
New Jersey: Camden, East Orange, Newark, Trenton.
New York: Binghamton, New York City, Rome, Syracuse, Troy, White Plains (county commission).
Ohio: Cleveland.
Pennsylvania: Allentown, Chester, Easton, Erie, Franklin, Harrisburg, Johnstown, Meadville, Newcastle, Oil City, Pittsburgh, Pittston, Philadelphia, Pottsville, Reading, Scranton, Wilkes-Barre, York.
Rhode Island: Providence.

City-planning Reports.—Three general city-planning reports have been published during the year: "Studies for Albany," by Arnold W. Brunner and Charles Downing Lay; "The City of Calgary: Past, Present and Future," by Thomas H. Mawson; "Preliminary Report for Bridgeport,

Conn.," by John Nolen. Certain park reports are for all practical purposes to be classified as city-planning reports, especially those for Spokane (Olmsted), Dayton (Olmsted), and Little Rock (Nolen).

The purpose of the report on "Through Routes for Chicago's Steam Railroads," prepared by George E. Hooker, civic secretary of the Chicago City Club, is to discover "the best means for attaining popular and comfortable travel for Chicago and suburbs," and with this intention it presents two propositions: "The first is that Chicago's urgent need for better means of fast and comfortable local travel should be largely met by its steam lines; the second is that these should, to that end, be organized on the through-route plan." The points made are that the steam lines are mostly elevated already, as respects street interference; that they represent the highest speed in travel, fan out thickly over the city, and, having their own rights-of-way, minimize public suffering from the noise, dust and danger incident to fast travel, whether on, above, or below the surface. Finally, it is shown that even in Chicago there is a wide margin of unused capacity on the steam railroads. Another report on Chicago's terminal situation was prepared by John F. Wallace, from the technical engineering viewpoint, and still another report on the same question by Bion J. Arnold. Mr. Arnold's recommendations look to a straightening of the south branch of the Chicago River; the placing, within a definite time, of the tracks of most of the steam railroad companies in covered subways beneath the street level in the area bounded by Twelfth, Halsted and Lake streets and the lake front; the concentration of long distance passenger traffic into the fewest possible number of terminals; and an "interchangeability of suburban service between roads operating in different parts of the city."

Four important contributions from Philadelphia are to be noted: "Report of the Transit Commissioner, July, 1913"; "Annual Report of the Department of City Transit, for the year ending Dec. 31, 1913"; "Annual Report of the Bureau of Surveys," for the same year; "South Philadelphia, the Abolishment of Grade Crossings and the Creation of Opportunities for Commercial and Industrial Development," published by the Department of Public Works.

Besides the annual reports of city-planning commissions in Hartford, Springfield, Detroit, Norfolk and other cities, other important reports of the year are: Minneapolis Civic and Commerce Association, "Report of Municipal Committee on Limitation of Heights of Buildings"; Massachusetts, first "Annual Report of the Homestead Commission," 1914, and "Report Relative to Taking Land for Public Purposes," February, 1915; Boston, Chamber of Commerce, "Report on City Planning in Relation to the Street System in the Boston Metropolitan District," and "Report on Street Traffic"; Pittsburgh, "An Account of the Work of the Art Commission of the City of Pittsburgh," from its creation in 1911 to Jan. 1, 1915; Newark, N. J., "City Planning —1914," leaflet, issued by the board of education for the study of Newark in the schools; Jersey City, "Addenda Memoranda to Report of Suggested Plan of Procedure for City Plan Commission," by E. P. Goodrich and George B. Ford.

A full discussion of the relation of these reports to each other will be found in an article by Charles Mulford Robinson in the July, 1915, issue of the *National Municipal Review*, and in a review of park reports in an article in the same issue by F. L. Mulford. Mr. Robinson sums up his opinion of the progress and vitality of the city-planning movement thus:

> With war ruining the cities of Europe, to which we so long have looked for instruction, and with many months of financial depression in this country, during which the cities had difficulty in selling bonds, it is noteworthy that our city-planning movement has continually progressed. The record of the next year is not likely to be less. Various cities, as Sacramento on the Pacific coast, Topeka in the far Southwest, Minneapolis and Grand Forks in the Northwest, and New York in the East, are known to have had studies made, to which publication is yet to be given, or to have such studies now under way. The University of Pennsylvania is conducting the first American summer school in town planning; the cities of California have lately organized a state

city-planning conference; annual conferences are now held regularly in Massachusetts and New York; and the National Conference grows every year in numbers and in importance. Each year, too, the literature is increasingly practical, and more thorough study precedes the reports.

The universities also are making practical contributions. Prof. C. M. Robinson of the University of Illinois has had his students prepare "Notes for a Study in City Planning in Champaign-Urbana." The course was designed "to give concreteness and practicability to their work," and the students were required to make a study of civic conditions in the twin cities in which the University is located. To each student, moreover, a special subject was assigned for investigation and report, and these theses, subsequently discussed in class room, form the chapters of the report. The students of Akron University prepared a report on Akron's pavements, in response to a request of the city council that the university investigate their condition, cost and durability. The report advocates city planning, noting that a first step in the planning of a pavement, as of any other structure, is the determination, as far as possible, of its future use, a determination which city planning based on traffic counts will go far toward settling.

Ohio.—The Ohio legislature of 1915 enacted a law whereby the council of each municipality may establish a city-planning commission of seven members, the mayor, the service director, the president of the board of park commissioners and four citizens of the municipality, who shall serve without compensation and who shall be appointed by the mayor for terms of six years, except that the term of two of the members of the first commission shall be for three years. Whenever such a commission is appointed it shall have all the powers conferred in the general code, and also the power to make plans and maps of the whole or any portion of the city, and of any land outside the municipality which in the opinion of the commission bears relation to the planning of the city, and to make changes in such plans or maps whenever it deems advisable. Such maps or plans shall show the commission's recommendations for new streets, alleys, ways, viaducts, bridges, subways, parkways, parks, playgrounds or any other public grounds or public improvements, and the removal, relocation, widening or extension of such public works then existing. With a view to the systematic planning of the municipalities, the commission may make recommendations to the mayor, council and department heads concerning the location of streets, transportation and communication facilities, public buildings and grounds. It also has the power to control, preserve and care for historical landmarks, to control in the manner provided by ordinance the design and location of statuary and other works of art, which are or may become the property of the city, and to control the design of harbors, bridges, viaducts, street fixtures and other public structures and appurtenances.

New Jersey.—The New Jersey legislature of 1915 passed an act giving each city of the first and second classes the power to appoint municipal plan and art commissions, the members of which are to serve without pay. Such commissions are to act in an advisory capacity to the local municipal governments and are to have no power to incur indebtedness except such as shall have been provided for and covered by appropriations previously made by the local municipal governments.

South Dakota.—An act was passed by the South Dakota legislature requiring that if lands, or any part thereof, are included in a plat, addition or subdivision within, adjoining or contiguous to the limits of any city or town, the plat, before the recording thereof, must be submitted to the council or governing board of the city or town, which shall examine it, and if it shall appear that the system of streets and alleys set forth in said plat conform to the system of streets and alleys of the existing plat of said city or town, and that the plat and the survey thereof have been executed according to law, the governing board shall approve the plat; and no plat shall be recorded in any office of any register of deeds unless it bears a copy of the resolution.

Philadelphia. — The Pennsylvania legislature of 1915 passed a series of important bills affecting the improvement of the City of Philadelphia. One gave the commissioners in charge of the parks authority to appropriate for public park purposes private property adjoining any public park whenever, in their opinion, such property shall be necessary for the improvement of said park. Another act gave the council authority to transfer city squares and parks to the park commissioners. This will result in giving them enormous powers under the first mentioned act to control the development of property in the vicinity of squares. Two other acts relate to the Parkway and to similar future improvements. The first provides that when a city of the first class shall superimpose upon the confirmed plan of streets any park or parkway, in an entirely built-up section of said city, this shall be considered as an appropriation to public use of the lands within the lines of the park or parkway. The act likewise regulates the alteration of buildings on land affected by such plans. The other act provides that in all cases where private property is taken, injured, or destroyed by municipal corporations invested with the privilege of taking private property for public use, the damages caused by such taking, injury, or destruction shall bear interest, at the rate of six per cent. per annum, from the date of such taking, injury or destruction. This is designed to protect property holders against unjust delays.

The Comprehensive Plans Committee of Philadelphia in its latest report recommends the establishment of a suitable building for its meetings, for public lectures, and for a permanent exhibition of maps, plans and models relating to the comprehensive development of the city. It proposes the adoption of some broad flexible programme to serve as a guide along the lines of which the comprehensive and homogeneous growth of the city may positively and evenly progress. This is to include improved methods and systems of sanitation and a comprehensive code of necessary enabling legislation affecting pressing necessities, as the limiting of the heights of buildings; dividing the city into industrial, residential and business districts; regulating the intensity of built-up areas; assessment of property for benefits; excess condemnation of land with public resale of the unrequired residue; more extensive supervision and control of the highways and traffic; regulation and censorship of the appearance of streets, buildings and advertisements; and the introduction of stricter and more advanced measures concerning sanitation and fireproof construction. Such a programme should embrace also, the committee recommends, a comprehensive financial policy regulating proportionately all improvement expenditures, and devise additional ways and means to increase the city's revenues. It should provide also for the exploitation of Philadelphia as a commercial, historic and residential city through the creation of a publicity commission.

Chicago.—The Illinois legislature of 1915 gave Chicago an opportunity to approve the consolidation of the various park governments with the city government. The effect of this consolidation would be to merge into the city government all of the local governments now existing, except the county and sanitary district authorities.

New York City.—The development and status of city planning in New York is set forth in an official report of the committee on city plan (George McAneny, chairman, Robert H. Whitten, secretary), appointed in 1914 (*A. Y. B.*, 1914, p. 223) and of the advisory committee of which Charles D. Norton is chairman. This document, which is abundantly illustrated, constitutes not only a history of New York's persistent efforts in this field, but a conspectus of present plans.

Canada.—Thomas Adams, a town-planning expert of England, has been retained by the Canadian Conservation Commission to establish a special bureau of city planning and housing, in connection with the activities of the Commission, to act as a central body to encourage and coöperate with provincial and other town-planning organizations. Mr. Adams is at the service of the town planners of the

Dominion. Mr. Adams has been in the foremost rank of the English movement, having been the secretary of the first "garden city" venture and afterwards the executive officer of the progressive town-planning Act of 1909 in England. On this continent his conception of the scope of city planning has been pronounced sound and has helped to change the view of city planning on this side of the Atlantic from that of the promotion of the "city-beautiful" to that of the "city healthful, efficient and comfortable."

National Conference on City Planning.—The seventh National Conference on City Planning (Flavel Shurtleff, 19 Congress St., Boston, secretary) was held in Detroit, June 7-9. An important feature was the report of the committee on the best methods of land subdivision, based on data received from local committees which have been gathering facts about the more important types of subdivisions tested in the United States and Canada.

Another feature was a conference of delegates representing the American Institute of Architects, National Association of Real Estate Exchanges, American Civic Association, National Conference of State Association of Mayors, National Municipal League, American Society of Civil Engineers, American Society of Consulting Engineers, American Society of Landscape Architects, American Society of Municipal Improvements, American Association of Builders Exchanges, National Fire Protection Association, National Housing Association, National City-planning Conference. The idea of the promoters of this conference was that

> appreciation of the meaning and value of city planning is spreading far too slowly. There is a great need for concerted effort and general coöperation in starting and carrying on a general campaign of city-planning education. The national organizations whose objects border on city planning are uniquely suited to understand this work. It must be of common advantage to all.

The *City Plan* is the title of the quarterly established during the year by the Conference.

Excess Condemnation.—A constitutional amendment was adopted in Massachusetts on Nov. 2, which authorizes the commonwealth "to take land and hold, improve, subdivide, build upon and sell the same for the purpose of relieving congestion of population and providing homes for citizens." Under authority of the constitutional amendment of 1911, legislation has been passed as follows: for Worcester, for the purpose of street widening (acts of March 2, 1912 and Feb. 28, 1913), and for laying out a public square (March 21, 1913); for Salem, for street widening (May 27, 1913); and for the Massachusetts Highway Commission, power for laying out street in Swampscott (June 13, 1913). These laws all provide for excess condemnation with power of resale with or without restrictions at the discretion of the condemning authorities.

Under the New York constitutional amendment of 1913, the following legislation has been passed: full power conferred in new Syracuse charter (April 11, 1914); and on New York City (May 11, 1915).

Satellite Cities.—A careful study of the industrial cities which have been established usually near some large city has been made by Graham Romeyn Taylor and published under the title *Satellite Cities* in the National Municipal League Series (New York, D. Appleton & Co.). Among the cities considered are Gary, Pullman, Corey and Ivorydale.

The Reconstruction of Belgium.—The reconstruction of Belgium after the war is a question actively engaging the attention of English town planners. Ewart G. Culpin, of the Garden Cities Association of England, has been made secretary of a Belgium Town Planning Committee. This committee has been divided for its preparatory work into two groups, English and Belgian, which will work simultaneously. The English group undertakes as its portion of the work the instruction of the Belgians in studies of the town-planning work already achieved in England. The second group consists entirely of Belgians, who agree to develop by reports or by designs the special problems of the restoration of their destroyed towns. In order to relieve the personal work of the members, the Committee, as far as its resources will

allow, will put at their disposal copyists and draughtsmen. Each study must be presented in four or five weeks from the opening of the study circles. It will be submitted to the critical examination of the Committee, who will be able to amend it or to decide upon a complementary study. The studies thus completed will be communicated with the least delay possible for the advice and observations of the Town Planning Committee in Brussels. Reciprocally, the works of the Brussels Committee will be sent to the English Committee. Ultimately all the studies, without preference, will be corrected by common consent as soon as all the necessary information, plans, etc., can be freely communicated, and when visits to the various places are made possible. At the request of the Belgian group, the English group arranged a programme of daily lectures on town planning at University College, London. In the Belgian group two sections are already formed, of architects and of engineers. The architects have divided up Belgium into districts, and have allotted the study of these to architects who formerly lived in them, special attention being given to those places where destruction has been most extensive. With the assistance of the other architects from the districts, preliminary graphic and documentary studies are being prepared, and it is satisfactory to note that already information is coming to hand of the exact extent of the destruction and the kind of suggestions that would be most useful to the municipal authorities.

HOUSING

Reactionary Legislation.—In the opinion of the National Housing Association,

> the social workers throughout the country have been unanimous in expressing the opinion that they have never witnessed so reactionary a year in legislative matters as the year that has just passed. It is encouraging to housing reformers to know that the reactionary spirit which has been manifested in regard to housing legislation in a number of legislative bodies is not, therefore, to be attributed to a change in public sentiment with regard to housing reforms, but rather as part of a general wave of popular sentiment extending throughout the country. In view of this state of public mind, housing reformers really are to be congratulated upon not having suffered more serious set-backs than they did suffer during the past winter.

In fact, the Association might have added that the failure in several state legislatures to undo what had been done could be cited as evidence that the reaction was not so great as some had thought.

The New York legislature repealed the housing law for second-class cities. The "home-rule" issue having been invoked, the people of the six cities affected made no effort to save it (see *Municipal Home Rule, supra*). In Pennsylvania a bill was introduced to repeal the Philadelphia housing law enacted in 1913, which had never been enforced because of the opposition of the real-estate owners in Philadelphia and the failure of Councils to provide the machinery for its enforcement. Along with this repeal bill, a weak "toothless" substitute for the Philadelphia law was introduced. Both bills passed the legislature by overwhelming majorities, but were vetoed by Governor Brumbaugh on April 9. He suggested that all parties in interest get together and see if a compromise measure could not be worked out. A compromise bill was accordingly prepared, amending the law of 1913. It was introduced on May 3 and passed the House by a vote of 189 to 1, and was subsequently signed by the Governor and is now law. This measure is much weaker than the law of 1913, is not satisfactory to the housing reformers, but is more satisfactory to the real-estate interests and landlords. It does contain, however, a number of features which mark an advance over the laws that were in force prior to 1913. An effort to repeal the Indiana law was defeated, as was likewise a similar effort in New Jersey.

Cleveland.—The "sunlight code" of Cleveland is an ordinary building code so-called because of the provisions designed to regulate the width

and depth of courts and yards. It is of doubtful practicality and indicates that a new attempt has been made to get away from beaten paths without carefully checking up its possibilities. Stripped of its verbiage, housing experts point out that yards on interior lots need be only ten feet deep and on corner lots, eight feet, if the builder is shrewd enough to have a wing on the rear of his main building not over 20 ft. in height. If the builder wishes to set his building back from the lot line of a side street, he must make his side yard, in width, equal one-sixth of the height of his building.

Minneapolis.—"The Housing Problem in Minneapolis," prepared by the Civic and Commerce Association, compares the needs of Minneapolis with that of other cities; in a series of appendices, illustrated by charts, it considers the requirements for adequate light and air. A proposed ordinance is submitted which would prohibit structures exceeding "a greater height than one and three-quarter times the width of the street, with a maximum height of 140 ft. to the top of the parapet," except under certain conditions, as, for example, for towers. The projection of cornices is also regulated. While this report does not compare in exhaustiveness of data with the study published in 1913 by the Heights of Buildings Commission of New York (*A. Y. B.*, 1913, p. 218), it yet constitutes a very definite and practical statement which is easily grasped.

Los Angeles.—The housing commission of Los Angeles offered a series of prizes for designs for houses for individual workingmen's homes, to stimulate interest in the living and housing of the unskilled wage-earners of the city, to encourage the building of proper houses for such of the people, and to counteract the tendency of landlords to crowd numerous people into tenements and flats and house courts. The commission desired that these houses should be for individual families; arranged on the land so that each should be given its proper air, light, ventilation, privacy, and its own yard and entrance; that the land and premises about these houses should be well drained, should have paved walks, and yards and lawn spaces, and should be arranged so that each house should have its individual flower garden. The competition resulted in some interesting plans which were placed on exhibition in the City Hall.

Philadelphia.—The Octavia Hill Association of Philadelphia has selected a vacant lot in the Kensington district on which it will erect 16 one-family houses of five rooms and bath, with furnace, to rent for $12.50 per month. In addition it will build 12 two-family houses with two rooms, bath and small kitchen on each floor, to rent for $8 per month. These are designed for people without children. Each house is to have a yard, and in the two-family houses the cellar will be divided.

Brookline.—After a vigorous campaign by the Town Improvement Committee against the wooden "three-decker" evil, the citizens of Brookline, Mass., at a special town meeting held on May 27, voted 587 to 344 in favor of an article amending the building law to prohibit this type of tenement house. This action is most significant because it was taken in open town meeting composed of persons who were largely property owners.

New York.—On May 25 the New York Court of Appeals handed down a decision in the case of the Tenement House Department *v.* McDevitt, which holds the owner of property responsible for its use for immoral purposes. Justice Cordoza, who wrote the opinion of the Court, said:

> The legislature has said that the owner must prevent at his peril a vicious use which can rarely be continued without his fault. It rules out inquiry into his excuses in the particular instance, because such excuses, if accepted, would tend to nullify the law. It frames its rules to meet the necessities of the average, rather than the exceptional case, and adjusts its penalties in correspondence with the common experience of mankind. . . . The landlord who fails to suppress the continued use of his tenement for purposes of vice is in the plight of any other owner who fails to abate a nuisance on his land. If the nuisance exists he must abate it at his peril or answer for the consequences. . . .
>
> We hold, therefore, that an owner is not liable for a penalty because of a single act of vice, undiscoverable, either by him or by his agent. The

penalty is imposed where the building or some part of it has been kept or maintained by the occupant for the purpose of prostitution. If, however, there has been a "use" for prostitution in that sense, we think it is not a defense that the use was unknown to the owner. The statute does not make his liability dependent upon knowledge or even negligence. It makes his liability dependent upon the prohibited use. If use is interpreted to mean, not an isolated act, but a practice or relation, the statute, we think, charges the owner with the duty to inform himself of the conditions prevailing in his building. In the long run, and looking, as legislation must, to the average results, the law, as thus construed, is not likely to work injustice. If the occupant of an apartment has used it for indiscriminate intercourse with men, has used it in the sense that she has kept or maintained it for that purpose, the diligent owner will seldom be blind to the offense.

This decision is regarded as of vital consequence to housing reformers throughout the country, for it not only affirms principles of law clearly established in earlier times, but so enunciates those principles as to provide a bulwark for public-health officers and for all those interested in securing the improvement of housing conditions through the police power.

Housing Associations.—The fourth National Conference on Housing in America was held in Minneapolis on Oct. 6-8, having been postponed from October, 1914 (*A. Y. B.*, 1914, p. 227). It was held under the auspices of the National Housing Association, in cooperation with the city of Minneapolis, the housing committee of the Minneapolis Civic and Commerce Association, and the Minneapolis civic and social-service organizations.

Housing associations have been organized in Connecticut, New Jersey, Pennsylvania, Indiana and Texas. The federal associations or committees dealing with housing are: National Housing Association, National League on Urban Conditions Among the Negroes, National Civic Federation. In Canada there is a Town Planning and Housing Association in Alberta.

Housing Institutes.—The housing movement in America has now progressed so far that it is possible to hold housing institutes of those actively working on housing problems and who have become in a measure professional practitioners. At the annual national conferences of the National Housing Association a considerable part of the time is frankly devoted to addresses and discussions designed to interest the general public and those who have just begun to have an interest in the improvement of housing conditions. The institute makes no such provision. Its sole purpose is to serve as a sort of seminar for advanced students. The Association held its first institute in Boston on Jan. 15. The members were drawn from all the New England states except Vermont, and from New York and New Jersey. The attendance was unexpectedly large, 105 registering.

The states represented at the Boston institute are preëminently the tenement-house states of the Union. Throughout New England the three-decker has secured so firm a foothold that it seems almost unassailable; New York City is known for its great tenement and apartment houses, and the large cities of New York State and New Jersey have inclined to imitate the metropolis.

So successful was this first institute that it was decided to make such institutes a regular part of the Association's work. A second was held in Baltimore on May 18, while the National Conference on Charities and Correction was in session, and a third in Detroit on June 10. The meeting at Baltimore dealt with housing in southern cities. Still another institute was held in San Francisco in connection with the Panama-Pacific Exposition, and another in New York City, May 24 to June 12, under the auspices of the New York School of Philanthropy. Several state housing institutes were held during the year.

Rebuilding of Salem, Mass.—During the first 12 months after the Salem fire of June 25, 1914 (*A. Y. B.*, 1914, p. 227), 517 building permits were issued for construction in the burned district, with an aggregate value of about $5,000,000. In addition, more than $1,000,000 of buildings have been added outside that area. The taxable value of the buildings destroyed was $5,300,000. Taking advantage of the situation, the city widened and extended important

streets and is planning to build a street extension across a tidal estuary which is to be filled. The water-supply system has been thoroughly reorganized and represents a substantial civic improvement. It involves the construction of a 10,000,000 gal. reservoir, 212 feet above the sea level. The industrial situation has been considerably relieved by means of a special fund raised by the relief committee composed of representative citizens of Salem and Massachusetts. Congress appropriated $200,000 and Massachusetts $100,000 for this fund.

FIRE PREVENTION

Calisthenic Manual for Firemen.—Commissioner Adamson of the New York Fire Department has issued to the uniformed force an illustrated calisthenic manual containing about 36 simple setting-up exercises. These exercises must be performed daily by all firemen for a period of 15 minutes, except when the men are fatigued from fire duty when the exercise hour arrives.

Telephoning Fire Alarms.—With the widespread introduction of the telephone in most of the larger cities, a means of informing the fire department of a fire is furnished which is more convenient than the fire-alarm box. In Charleston, S. C., for instance, in 1914, 148 of a total of 246 fire alarms were by telephone. There are serious objections to depending entirely on the telephone, however, and, according to the *Municipal Journal*, some departments advocate discouraging all use of telephone for sending in fire alarms. The reason is that the average citizen, when he finds his house afire, becomes too excited to give an intelligent statement of just where the fire is and to wait until he is assured that the fire department operator has correctly the necessary information. Another objection to telephone alarms is the ease with which false alarms may be sent in and the offender escape detection.

Decrease in New York's Fire Loss.—The per capita fire loss in New York City in 1915 was the lowest for any year in the history of the city save one, and the total fire loss the lowest of any year since 1907 save two, although the population is 1,379,000 greater than in the latter year. These results have been achieved with a budget for 1915 reduced by $65,000 from the budget for 1914, although provision has been made for 20 new fire companies at a cost of $400,000 a year. There was an increase of 58½ per cent. in the number of orders of the Fire Prevention Bureau which were obeyed, and an increase of 29½ per cent. in the number issued. Commissioner Adamson has established in the courts the right of the fire commissioner to recover the cost of extinguishing a fire which is the result of "culpable and willful negligence." The commissioner has also established an emergency fire-alarm system and has had the teaching of fire prevention introduced into the schools. He has also instituted inspection of lodging houses and public schools.

Building Inspection in Pennsylvania.—Pennsylvania second-class cities have now the power under an Act of 1915 to regulate the construction, maintenance and inspection of all buildings, and the equipment of all buildings to prevent fire and spread of fire, and for the regulation of all stores and other places where many people gather, and the removal or remedying of all dangerous conditions likely to cause fire and the spread of fire.

Fire Prevention at the Panama-Pacific Exposition.—According to experts on fire risk, there was not an area in the world that was as safely guarded against conflagrations as the Panama-Pacific International Exposition at San Francisco. On the 635 acres of highly inflammable structures practically every known agent for fire fighting was installed, from water to chemicals, and from high-powered motor apparatus to automatic sprinklers and alarms. The Exposition's fire-fighting system was a unit in itself, independent of San Francisco's system in all respects except water supply. High-pressure

and low-pressure mains on the Exposition grounds tapped those of the city's system.

Fireproof Structures for Fire Departments.—A vigorous effort is now being made to have fire houses made of non-inflammable material. A few years ago the quarters of the fire-protection squad of a large New Jersey city burned and did serious damage to the fire apparatus. There have been several instances of engine houses burning. When Boston, two or three years ago, was planning its new high-pressure fire service, it gave particular attention to the location of the pumping station, to insure that it would be absolutely free from interference by fire in its vicinity, ultimately placing it on a pier some distance from shore. In the big San Francisco fire in 1906 not a single fire alarm was sent in, for the reason that the fire alarm station was one of the first buildings to catch fire.

Fire Prevention.—The most important development during the year along fire-prevention lines has been the gathering sentiment in favor of holding individuals personally liable for damage done by fires due to carelessness or neglect. In over a dozen state legislatures measures with this object in view were introduced, and in four or five were favorably reported. Cleveland has passed an ordinance placing upon the individual on whose premises the fire occurs the entire cost of extinguishing or attempting to extinguish a fire which can be traced to neglect of any order of the fire department or any disobedience of municipal regulations. A law to this same purpose was passed by the Pennsylvania legislature applying to cities of the first class. Pennsylvania is the first state to take this step. A normal development of fire-protection measures has continued in other directions. Additional powers and authority are being conferred upon fire chiefs and fire-prevention work is being increasingly looked for from fire departments.

Signal Systems.—Outrement, P. Q., Can., has recently installed a police and fire signal system, which is unsurpassed in any American city. The fire-alarm system consists of 27 positive non-interfering succession keyless and bell-less boxes, and the police signal system consists of 13 boxes equipped with wagon, duty and telephone signals and with a green flashlight and a large vibrating gong.

POLICE

Police Statistics.—According to Andrew L. Bostwick, municipal reference librarian of the St. Louis Public Library, New York has the largest number of policemen (4,258) and the largest number on duty at a time (3,086). Philadelphia, St. Louis and Boston have the largest number of policemen per 10,000 population (19), and the largest number on duty at a time per 10,000 population (6.3). Boston has the largest number per square mile of area (30), and the largest number on duty at a time per square mile of area (10). New Orleans has the largest population per patrolman on duty (2,937), and Cincinnati has the largest number of miles of streets (5.7) and the largest number of miles of improved streets (3.5) for each patrolman on duty.

Police Ordinances.—The police ordinances of Chicago and New York, carrying a penal sanction, have been published in a pocket-size volume. In brief non-technical language the essential provisions and citations are given. Lieutenant Hannon, chief of the bureau of disciplinary records of the New York Police Department, has prepared for the use of the police commissioner a digest of all New York court decisions affecting the discipline of policemen.

Veteran Policemen.—In Albany, N. Y., policemen who, after many years of faithful service, are not capable of severe or prolonged physical exertion but are still capable of some work, are assigned to the veteran grade, given light details, and paid a salary of $600.

Policewomen.—The policewomen of the country, which in May numbered 62 in 23 cities, have been organized to attract women of the best type. They will spread the idea of putting

women on the police force, placing special emphasis upon crime prevention and protective measures for women and children, without interfering in any way with the regular police work. Mrs. Alice Stebbins Wells of Los Angeles has been chosen president, and Mrs. Georgianna Sherrot of Minneapolis, secretary, of the organization, which is an outcome of the Baltimore meeting of the National Conference of Charities and Correction.

Junior Police.—The police captain in command of a congested tenement district in New York has organized about 300 boys of his precinct into a junior police force, of which he is the commissioner. It is modelled after the regular force, with a captain, a lieutenant, two sergeants and 21 patrolmen assigned to each zone into which the precinct is divided. The junior police are assigned to the duty of enforcing the municipal ordinances relating to cleanliness and fire prevention in their own homes and in the zone to which they are assigned, and to the duty of suppressing such juvenile offenses as crap-shooting, swearing, bonfire building, cigarette smoking and sidewalk chalking. The educational value of this junior police force is of more importance than its police value. This movement teaches the boys the principal municipal ordinances, encourages them to explain them to their parents who do not understand our language, and influences them to refrain from committing street offenses. It serves to eradicate the traditional enmity existing between the city boy and the policeman and is likely to convert into law-abiding citizens many boys who might otherwise become toughs and gangsters.

Centralized Police Reserves.—Commissioner Woods of the New York Police Department is substituting centralized district reserve forces for the small precinct reserves formerly maintained for emergency use. Under this new plan a larger force under a competent superior officer will always be available for emergency service in each police district, in lieu of the small precinct forces formerly maintained. Reserves are to be transported to the scene of trouble in automobile patrol wagons. The commissioner has also introduced a system for the consideration of police problems at weekly conferences with the inspectors and by committees of inspectors, established a system of suspended sentence and probation in the less serious cases of delinquent members of the force, introduced an accurate system for the recording of police statistics; established car-stop safety zones and street playground zones, and thoroughly reorganized and developed the school for recruits into a police training school.

Police Signal Lamps.—Commissioner Woods has established in the busiest precinct of New York a system of signal lamps, each of which is connected with the station house of the precinct on an independent electric circuit. One of these lamps is located on the beat of each patrolman and the lieutenant at the desk in the station house can, by closing the circuit and lighting the lamp, call the patrolman on post on any beat to the telephone for orders. The response of the patrolmen to these signal lamps is very prompt and the efficiency of the patrol service is much increased thereby.

St. Louis Promotion Plan.—St. Louis has adopted a police promotion system which is distinctly superior to the plans in use in other cities which do not have civil-service promotion examinations. Whenever a vacancy occurs all men in the next lower rank who are eligible for promotion are directed to submit to the head of the force through official channels an application for promotion which shall contain a brief account of their service in the department, their principal assignments and details, their meritorious acts and performance of exceptional police duty. The commissioner addresses letters of inquiry to the citizens named in these applications. These applications together with the replies received by the commissioner are carefully considered on a competitive basis, and the best man is selected for promotion.

International Association of Chiefs of Police.—The twenty-second annual convention of the International Association of Chiefs of Police was held in Cincinnati, May 25-27. At the

same time the conventions of the International Sheriffs' Association and the International Railway Special Agents and Police opened. The three associations held joint and separate meetings. Newark, N. J., was selected for the 1916 convention and Michael Regan, chief of police of Buffalo, was elected president, succeeding Major Richard Sylvester, the founder of the Association, who resigned as chief of police of Washington during the year.

Vice Investigations and the Social Evil.—The Richmond, Va., vice commission issued early in 1915 a report which is the first careful inquiry into the social evil by any community south of Mason and Dixon's line. It officially and formally condemns segregation, a condition still existing in the South more than in any other part of the country.

The California Red-Light Abatement Act was approved by a referendum vote on Nov. 3, 1914. The law, however, does not seem to have been effective in checking the dangers of the situation, for with reference to moral conditions, the American Social Hygiene Association points out, as indicative of a general laxity, that there has been an increase in the number of questionable dance halls and a failure to utilize the law. Moreover, immediately upon its final approval it was attacked by a series of test suits and an appeal to a higher court is still pending. The injunction and abatement law against houses of "lewdness, assignation and prostitution" as adopted in various forms in several states was the subject of a comprehensive report prepared for the Association by its associate counsel, Bascom Johnson, who is of the opinion that the law affords an effective weapon against scatteration, that it is a help rather than a hindrance to the elimination of prostitution, and that segregated districts are impossible since its passage.

The following is a partial list, prepared by the International Reform Bureau, of cities which have (mostly within the past three years) officially abandoned the policy of regulating or tolerating brothels: Portland, Me.; Manchester and Portland, N. H.; Boston, Springfield, Worcester, Newton, Chelsea, Malden, Everett, Cambridge, Brockton, Fall River and Somerville, Mass.; Providence, R. I.; Bridgeport, Hartford and New London, Conn.; Troy, Rochester, Syracuse and Yonkers, N. Y.; Norristown, Altoona and Erie, Pa.; Wilmington, Del.; Wheeling, W. Va.; Detroit, Mich.; Rockford and East St. Louis, Ill.; Milwaukee, Wis.; Des Moines and Davenport, Iowa; Omaha, South Omaha and Lincoln, Neb.; Kansas City and Wichita, Kans.; Minneapolis, St. Paul and Duluth, Minn.; Seattle, Wash.; Portland, Ore.; Los Angeles and Oakland, Cal.; Austin, Tex.; Atlanta, Ga.; Huntsville, Ala.; Cleveland and Dayton, Ohio. In Dayton there was considerable curiosity as to how City Manager Waite would handle the social evil, so generally regarded a stumbling block of municipal administration. After closing the houses of assignation, he abolished the segregated district.

In Chicago a permanent Morals Commission has been authorized to study the social evil, prepare recommendations concerning legislation, and act in an advisory capacity to the health and police departments. The health commissioner is an *ex officio* member of the commission; the other members of the commission are: Dr. Anna Dwyer, physician for the Morals Court; Dr. Emil G. Hirsch, Sinai Temple; Rev. W. J. McNamee, St. Bridget's Church; and John Koelling, of the United Societies. (See also XV, *Social and Mental Hygiene.*)

NUISANCES

Smoke and Pure Air.—The big event of 1915 in the study of the smoke nuisance and air purification was the publication of the voluminous report (1,177 pp.) of the special committee on the subject of the Chicago Association of Commerce. The findings of the committee, which was headed by W. F. M. Goss, were outlined in 11 recommendations, predicated upon the desire of the people of Chicago for a clearer and cleaner atmosphere:

(1) That there be created by the city a permanent Pure Air Commission, the membership of which shall be made up of persons possessing high technical qualifications.

(2) That financial support be placed at the command of the Commission, which shall be sufficient adequately to provide for the organization and development of investigations of a highly scientific character.

(3) That the Commission be empowered to investigate all sources of air pollution, to determine, by experiment or otherwise, the most effective means for mitigating or eliminating such pollution, and that, so far as practicable, it be invested with power to enforce obedience to its decisions.

(4) That no material shall be employed in paving without the consent of the Commission, to the end that dust-creating pavements may be abolished.

(5) That the paving and cleaning of alleys and other highways shall be subject to the supervision of the Commission.

(6) That the Commission shall have power to require that the wrecking and erection of buildings shall proceed by methods which will protect the air from all unnecessary pollution.

(7) That the Commission shall have the power to require roofs to be cleaned and other minor sources of air pollution to be abated.

(8) That new installations of boiler and other furnaces be permitted only as licensed by the Commission, which shall have power, under reasonable rules, to determine the character of the installations.

(9) That the Commission be charged with the duty of investigating present practice in the construction and operation of domestic furnaces, with a view to so perfecting such practice that fuels now used may be burned without objectionable air pollution, or to so changing the character of present fuels as to accomplish the same result.

(10) That the Commission be charged with the duty of investigating the construction and operation of metallurgical and high pressure steam-boiler furnaces, with a view to eliminating, so far as practicable, the air pollution for which such furnaces are responsible, and that it formulate and enforce regulations under which such furnaces shall hereafter be constructed and operated.

(11) That the Commission be charged with the duty of investigating the pollution of the air by railroad locomotives, by steamboats and by other transportation agencies making use of movable engines, of devising methods of abating air pollution from these sources, and of enforcing such provisions for the suppression of air pollution as may be found necessary.

The report says that electrification of Chicago's steam railroads is "technically practicable, but financially impracticable." It says that electrification with its consequent expenses would cost $274,440,630, and that it would do but little toward abating the smoke nuisance. A paragraph from the report is significant of the committee's attitude:

It is apparent also that Chicago's claim to the benefits of electrification are in no way different from those which might be urged by many other cities with which Chicago railroads connect; that compulsory electrification, if achieved for Chicago, may in due time be secured by all of the large cities of the country. The cost therefore which might be imposed upon the railroads as a whole by the compulsory electrification of Chicago's terminals would be confiscatory.

The conclusions of the committee on this phase of the question may be summarized as follows:

That the cost of electrification would be so heavy that no court would uphold an electrification ordinance.

That the Chicago electrification would equal the combined electrification of the whole world, would involve problems never heretofore met, and would be the first ever undertaken for air betterment where terminals were adequate from an operating viewpoint.

That before the steam locomotive is eliminated pollution must first be reduced to a minimum from the three more damaging services, high-pressure steam plants, metallurgical and other manufacturing furnaces, and domestic fires.

That the Loop is the smokiest district, with the stockyards and South Chicago a close second and third.

That in Chicago air, the products of combustion constitute only two-thirds of the total pollution, the other third being due to avoidable and unavoidable dirt from the general activities of the city and from poor municipal housekeeping.

MUNICIPAL ORGANIZATIONS

National Municipal League.—The twenty-first annual meeting of the National Municipal League was held in Dayton, O., Nov. 17 to 19. The committee on municipal programme reported the result of its two years' labors in the form of a model city charter and constitutional provisions (*A. Y. B.*, 1914, p. 217). After extended discussion it was approved for submission to all the members. The other committees reporting at this meeting were those dealing with the relation of the city

to the cost of living, municipal reference libraries, city and county consolidation, civic education, budgets and accounting, franchises, municipal courts, sources of revenue, and political methods. The City Managers' Association, Ohio Association of Urban Universities and the Ohio Municipal League held joint sessions with the League. Lawson Purdy was elected president, and George Burnham, Jr., and Clinton Rogers Woodruff, both of Philadelphia, treasurer and secretary respectively. The following vice-presidents were elected: Miss Jane Addams, Chicago; John Stewart Bryan, Richmond, Va.; Charles Richardson, Philadelphia; Richard S. Childs, New York; Charles W. Dabney, Cincinnati; Walter L. Fisher, Chicago; Frank J. Goodnow, Baltimore; A. Lawrence Lowell, Cambridge, Mass.; George McAneny, New York; J. Horace McFarland, Harrisburg, Pa.; Robert Treat Paine, Boston; L. S. Rowe, Philadelphia; Chester H. Rowell, Fresno, Cal.; Dudley Tibbits, Troy, N. Y.

The Civic Secretaries Committee held a series of conferences at Dayton in connection with the League's meeting. The following officers were elected: Addison L. Winship, president; Hornell Hart, Milwaukee, secretary; Miss H. Marie Dermitt, Pittsburgh, treasurer. The Intercollegiate Civic Division has taken up the work of the former Intercollegiate Civic League, holding a conference of the various college civic organizations in April. The first-day sessions were held in New York and the second-day sessions in Washington.

Two additional volumes have been added to the National Municipal League Series (New York, D. Appleton & Co.): *Satellite Cities*, by Graham Romeyn Taylor, and *City Planning*, by John Nolen. The report of the committee on the relation of the city to its food supply was issued in pamphlet form during the year. A pamphlet dealing with the "City-Manager Form of Government," including the address of City Manager Waite at the Baltimore meeting, was also issued. A *Municipal Encyclopaedia* in two volumes will be issued under the auspices of the National Municipal League and under the editorship of Clinton Rogers Woodruff, secretary, and will be published by D. Appleton & Co., New York.

The American Civic Association met during the Christmas holidays under the general auspices of the second Pan-American Scientific Congress. J. Horace McFarland, of Harrisburg, was reëlected president, Richard B. Watrous, Union Trust Building, Washington, secretary and William B. Howland, of *The Independent*, New York, treasurer. City planning and general civic improvement formed important features of the year's work and of the annual meeting.

The American Society of Municipal Improvements met in Dayton, Oct. 12 to 15. It considered a long series of papers dealing with technical subjects. A. F. MacCallum of Hamilton, Ont., was elected president, and Charles Carroll Brown, editor of *Municipal Engineering*, Indianapolis, was reëlected secretary.

The League of American Municipalities held its meeting in New Orleans, Sept. 26 to 28. Martin Behrman of New Orleans was elected president and Robert E. Lee, of Baltimore, secretary.

State Municipal Leagues.—In the following states the city officials are organized for mutual coöperation and profit: Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Virginia, North Carolina, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Tennessee, Alabama, Mississippi, Oklahoma, Texas, North Dakota, Nebraska, Kansas, Montana, Colorado, Washington, Oregon and California. There is also a League of Northwest Municipalities (Washington, Oregon and Idaho). The New York Conference of Mayors has established a bureau of information at Albany.

Conference of City Managers.—The first conference of the managers of American cities was held in Springfield, O., December 2-4, 1914. All chief executive officers appointed by the legislative body are eligible for membership. Eight city managers were present and an association was formed, with Charles E. Ashburner, city manager of Springfield, as presi-

dent, and Ossian A. Carr of Cadillac, Michigan, as secretary. Necessarily the papers presented were of temporary value only, inasmuch as there has not been sufficient experience upon which to base serious reports. A second conference was held in Dayton, Nov. 17-20, 1915, in conjunction with the National Municipal League. Henry M. Waite, city manager of Dayton, was the presiding officer.

Conference of American Mayors.—A Conference of American Mayors on public policies as to municipal utilities was held in Philadelphia, Nov. 12-14, 1914. It was distinguished by five important features: first, a programme which presented the relation of the city to its municipal utilities from every important point of view; second, a wide attendance by mayors, official delegates from cities, aldermen, public-service commissioners, and delegates from civic associations and universities; third, the prevalence of a sustained demand for reserving to each city full power to municipalize its public-service institutions at will without undue legal, financial or constitutional handicap; fourth, the rising resentment in American cities against the state public-service laws that have deprived the cities of adequate powers over their own most important services; and fifth, steps taken toward the final establishment of a Utilities Bureau through which cities may cooperate on utility matters. The proceedings were published in the *Annals* of the American Academy of Political and Social Science for January under the title "Public Policies as to Municipal Utilities." The Bureau has been organized with Morris L. Cooke, director of public works of Philadelphia, as temporary director. (See also XI, *Public Services.*)

Commercial Executives.—Local business bodies generally are feeling the need of merging their interests and in many cities we find one strong body superseding and merging a congeries of smaller and less effective ones. Now the secretaries of these bodies have reinforced and nationalized the tendency. At Cincinnati in September, 1914, the American Association of Commercial Executives and the Central Association of Commercial Executives merged to form the National Association of Commercial Organizations Secretaries. The officers are: president, S. Christy Mead, secretary of the Merchants' Association of New York; secretary, J. A. McKibben, secretary of the Boston Chamber of Commerce.

The American City Bureau Summer School for Commercial Secretaries was opened on June 19 at East Dorset, Mass., and continued until July 7. Of this period, two weeks were devoted to classroom study of the technique, the ideals and the proven policies of organization management from the chamber of commerce standpoint. One week was given over to visiting the principal commercial and civic organizations in Boston and New York, including important national organizations that have headquarters in the latter city. A distinction was drawn between the scope of the old chamber of commerce, which concerned itself with industrial promotion and the exploitation of real estate, and the field occupied by the modern chamber of commerce along commercial, industrial, civic, sociological, charitable and educational lines. Community leadership and psychology also came in for careful attention, as did efficiency bureaus, city-planning, municipal-research bureaus, vocational training in public schools, increasing influence of other public institutions, unemployment relief, and industrial and other public exhibits.

MISCELLANEOUS

Chicago's Crime Committee.—Under the chairmanship of C. E. Merriam, a searching investigation of Chicago's crime and its causes has been made. The report, published March 22, 1915, contains a clear exposition of the causes of American police inefficiency and numerous recommendations for the correction of these causes, which have been obtained by criminological, psychological and sociological research. The police officer will find its recommendations for the improvement of police organization and meth-

ods in Chicago most helpful. The recommendations are sound in principle and many of them have already been adopted by the New York Police Department. The more significant findings were that the treatment of crime in Chicago is totally inadequate, the amount of crime is increasing and that the police organization and methods are wholly inadequate. Among the things accomplished as a result of the investigation have been a series of investigations of police graft by the state's attorney and a batch of indictments which are now being tried; the activities of professional bondsmen curtailed; additional facilities provided for the psychopathic laboratory; bonds issued for a farm colony; the improvement of police stations and shelter houses; and a system for the payment of the earnings of prisoners to their families. (See also XV, *Criminology and Penology.*)

The "City Mother." — A "city mother" to act in a confidential capacity with parents in juvenile cases was an innovation introduced by Chief of Police, now Mayor, Sebastian of Los Angeles. His reasons for this appointment are given in his annual report:

> I find that many parents do not like to visit the police juvenile bureau, or either of the station houses, fearing publicity, and dreading the effect of its consequences. It will be the duty of the policewoman detailed to command this bureau to receive in confidence the statements of parents concerning their children, and to assist them in every way possible consistent with police duties.

The Ashtabula Election.—On Nov. 2 Ashtabula, Ohio, elected its city council (commission-manager plan) on the basis of proportional representation. This was the first public proportional election in this country. Fourteen candidates were in the field, seven of whom were to be elected. The election was on the Hare system (*A. Y. B.*, 1914, p. 64); it passed off without difficulty or confusion.

Americanization Day.—Under the guidance of the New York Committee on Immigrants, a nation-wide effort to make July 4 a special day for the welcoming of newly naturalized citizens and of impressing upon them their duties as American citizens was conducted with great success. The idea was endorsed by the mayors of the New York cities and of other cities throughout the country. "Citizenship receptions" were the prominent feature of the Independence Day celebrations. The main thought of the movement fostered by Miss Frances A. Kellor, the executive of the Committee, was that patriotism should be visualized and given a new democratic form of expression. (See also XV, *Immigration.*)

Graft.—On July 30 Lieut. Charles Becker paid the extreme penalty for his part in the Rosenthal murder (*A. Y. B.*, 1912, p. 215). After exhausting every possible form of appeal, he was finally electrocuted, thus closing one of the most sensational cases in police annals.

In Chicago the state's attorney succeeded in convicting six persons who were responsible for the clairvoyant trust and the police who had afforded protection. He likewise exposed what was known as the "burglar trust" and the protection afforded it by commanding officers. A number of cases involved in these exposures are still pending, but the record of convictions to date is a very satisfactory one.

In Indiana, the mayor of Terre Haute and a number of other public officials in that city were convicted of gross election frauds; 27 principals were involved and over 100 defendants. In June, 1914, the grand jury of Marion County, Ind., returned indictments against 15 election officers. In December, 34 indictments were brought in against 13 members and employees of the legislature, including the lieutenant-governor and the secretary of state, then speaker of the House. In June, 1915, came another indictment of politicians by the grand jury, when Thomas Taggart of the National Democratic Committee, Mayor Bell of Indianapolis, the chief of police, the city attorney, all of whom were subsequently acquitted, and 125 other Indiana politicians were charged with conspiring to commit felonies in connection with the county primary registration and election. A number of the defendants pleaded guilty and the trials of others are proceeding.

An extended review of graft investigations and prosecutions of the year, including those here mentioned, by Alice M. Holden, is given in the October, 1915, issue of the *National Municipal Review*.

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FINANCIAL STATISTICS OF CITIES OF POPULATION ABOVE 50,000

(In Thousands of Dollars)

The figures in this table are courteously supplied by the Bureau of the Census from the report on "Financial Statistics of Cities" for 1915 in press at the end of the year. They relate to the fiscal year ending June 30, 1915, or to the first fiscal period prior thereto.

	Population, 1910	Assessed Valuation of Property	Total Tax Levy for Municipal Purposes	Total Revenue Receipts	Government Cost Payments			Net Debt
					For Expenses and Interest	For Outlays	Total	
Akron, Ohio	69,067	118,757	1,462	1,848	1,511	2,658	4,170	6,859
Albany, N. Y.	100,253	115,086	2,023	2,953	2,261	1,923	4,185	5,783
Allentown, Pa.	51,913	46,807	565	808	596	139	736	824
Altoona, Pa.	52,127	26,232	545	873	648	458	1,106	2,047
Atlanta, Ga.	154,839	181,948	2,290	3,793	2,848	854	3,702	4,920
Baltimore, Md.	558,485	781,691	10,022	15,901	13,773	9,312	23,085	59,613
Bayonne, N. J.	55,545	57,095	832	1,606	1,336	361	1,698	2,620
Birmingham, Ala.	132,685	95,554	955	2,711	1,988	605	2,593	5,839
Boston, Mass.	670,585	1,550,046	24,661	34,879	29,916	6,301	36,218	83,096
Bridgeport, Conn.	102,054	117,594	2,105	2,331	1,810	963	2,773	2,621
Brockton, Mass.	56,878	52,988	1,070	1,503	1,272	440	1,713	3,047
Buffalo, N. Y.	423,715	414,820	11,612	15,184	12,675	4,998	17,673	32,748
Cambridge, Mass.	104,839	127,887	2,437	3,256	2,796	501	3,298	7,197
Camden, N. J.	94,538	61,913	850	1,759	1,634	594	2,229	4,378
Canton, Ohio	50,217	73,185	669	961	741	804	1,545	2,646
Charleston, S. C.	58,833	20,750	840	1,336	906	289	1,195	4,114
Chicago, Ill.	2,185,283	1,000,831	48,107	80,622	55,132	26,313	81,446	64,911
Cincinnati, Ohio.	363,591	598,925	9,018	13,785	12,300	5,035	17,335	59,838
Cleveland, Ohio	560,663	872,385	12,811	18,095	14,466	11,888	26,354	57,073
Columbus, Ohio	181,511	275,819	3,046	5,015	3,994	1,917	5,912	10,043
Covington, Ky.	53,270	29,934	523	890	800	150	950	2,245
Dallas, Texas	92,104	116,863	2,220	3,435	2,007	2,112	4,119	5,946
Dayton, Ohio	116,577	166,831	1,853	2,972	2,066	771	2,838	6,009
Denver, Colo.	213,381	403,719	4,424	6,366	5,133	1,032	6,166	908
Des Moines, Ia.	86,368	34,456	1,848	2,047	1,730	598	2,328	3,355
Detroit, Mich	465,766	554,382	14,131	17,559	13,600	7,392	20,993	18,477
Duluth, Minn.	78,466	72,672	1,473	3,081	1,924	1,210	3,134	6,694
East St. Louis, Ill.	58,547	13,769	671	1,144	834	163	998	1,339
Elizabeth, N. J.	73,409	66,975	823	1,445	1,155	479	1,634	3,216
Erie, Pa.	66,525	49,216	824	1,407	947	897	1,844	1,034
Evansville, Ind.	69,647	38,277	773	1,219	916	200	1,116	1,672
Fall River, Mass.	119,295	102,521	2,126	2,833	2,251	600	2,852	5,049
Fort Wayne, Ind.	63,933	37,795	775	1,863	993	990	1,983	986
Fort Worth, Tex.	73,312	65,932	1,252	1,694	1,440	502	1,942	5,446
Grand Rapids, Mich.	112,571	113,791	1,886	3,077	2,093	1,210	3,303	3,785
Harrisburg, Pa.	64,186	48,646	898	1,481	1,062	432	1,494	2,722
Hartford, Conn.	98,915	172,951	2,833	3,588	2,819	2,220	5,040	8,806
Hoboken, N. J.	70,324	73,199	1,035	1,561	1,584	213	1,797	3,064
Holyoke, Mass.	57,730	63,382	1,054	2,013	1,648	670	2,318	3,207

FINANCIAL STATISTICS OF CITIES OF POPULATION ABOVE 50,000—*Continued*
(*In Thousands of Dollars*)

	Population, 1910	Assessed Valuation of Property	Total Tax Levy for Municipal Purposes	Total Revenue Receipts	Government Cost Payments			Net Debt
					For Expenses and Interest	For Outlays	Total	
Houston, Texas	78,800	109,578	2,027	2,760	2,021	2,709	4,731	9,857
Indianapolis, Ind.	233,650	240,453	4,025	5,957	4,238	1,924	6,163	4,850
Jacksonville, Fla.	57,699	59,274	813	1,923	1,538	1,005	2,544	3,847
Jersey City, N. J.	267,779	275,237	3,717	6,792	5,544	774	6,319	19,521
Johnstown, Pa.	55,482	48,035	631	815	623	324	948	818
Kansas City, Kans.	82,331	92,829	1,254	2,141	1,599	699	2,298	5,556
Kansas City, Mo.	248,381	215,361	5,429	10,296	6,086	5,043	11,130	9,767
Lawrence, Mass.	85,892	79,966	1,237	1,733	1,512	480	1,993	2,525
Los Angeles, Cal.	319,198	415,864	12,718	24,405	14,538	10,972	25,511	.....
Louisville, Ky.	223,928	211,872	3,728	5,829	4,455	1,717	6,173	11,864
Lowell, Mass.	106,294	89,540	1,735	2,312	2,022	338	2,361	2,674
Lynn, Mass.	89,336	91,150	1,604	2,441	1,923	1,019	2,942	4,328
Manchester, N. H.	70,063	68,798	898	1,352	1,118	300	1,418	1,154
Memphis, Tenn.	131,105	124,077	1,960	3,222	2,973	901	3,874	12,288
Milwaukee, Wis.	353,857	496,342	8,961	12,630	9,219	5,114	14,334	14,380
Minneapolis, Minn.	301,408	260,901	6,250	10,484	7,688	4,453	7,688	19,007
Mobile, Ala.	51,521	33,074	363	1,045	756	211	968	3,090
Nashville, Tenn.	110,364	82,809	1,242	2,183	2,029	891	2,920	6,038
Newark, N. J.	347,460	403,199	7,403	12,059	11,232	8,363	19,595	36,960
New Bedford, Mass.	96,652	108,233	2,233	3,103	2,349	889	3,239	8,029
New Haven, Conn.	133,605	154,290	2,678	2,956	2,368	833	3,201	4,235
New Orleans, La.	339,075	245,242	5,446	8,181	7,101	2,841	9,942	42,845
New York, N. Y.	4,766,883	9,148,637	154,765	206,254	191,765	52,797	244,562	921,753
Norfolk, Va.	67,452	68,943	1,091	1,899	1,743	246	1,990	8,234
Oakland, Cal.	150,174	142,202	3,946	6,147	3,851	3,198	7,049	9,226
Oklahoma City, Okl	64,205	69,322	1,092	1,249	1,145	74	1,220	4,827
Omaha, Neb.	124,096	37,601	2,123	3,986	3,126	1,086	4,212	15,290
Passaic, N. J.	54,773	48,416	520	893	825	364	1,190	2,578
Paterson, N. J.	125,600	109,943	1,404	2,274	1,853	1,044	2,897	4,739
Pawtucket, R. I.	51,622	55,466	843	1,397	1,182	562	1,744	5,055
Peoria, Ill.	69,950	23,566	1,070	1,563	1,117	270	1,387	972
Philadelphia, Pa.	1,549,008	2,240,941	26,873	45,242	39,363	8,171	47,535	101,863
Pittsburgh, Pa.	533,905	771,024	15,411	20,202	16,503	6,018	22,522	51,931
Portland, Me.	58,571	70,410	1,128	1,827	1,502	269	1,771	6,862
Portland, Ore.	207,214	314,105	5,406	9,908	6,528	4,865	11,394	16,021
Providence, R. I.	224,326	344,204	4,455	6,521	5,222	2,724	7,947	13,523
Reading, Pa.	96,071	56,808	909	1,398	1,200	530	1,730	2,115
Richmond, Va.	127,628	156,403	2,206	3,886	3,073	1,749	4,823	11,170
Rochester, N. Y.	218,149	241,387	4,519	7,408	5,787	2,526	8,313	11,570
Saginaw, Mich.	50,510	46,997	691	1,262	815	202	1,018	873
Salt Lake City, Utah	92,777	68,143	1,535	2,994	2,183	1,487	3,670	6,222
San Antonio, Tex.	96,614	105,566	1,748	1,987	1,768	2,161	3,930	5,633
San Francisco, Cal.	416,912	541,894	12,403	.....	.....	10,583	.....	42,635
Savannah, Ga.	65,064	57,151	794	1,415	1,177	394	1,572	3,264
Schenectady, N.Y.	72,826	61,195	1,893	1,847	1,582	1,548	3,131	4,683
Scranton, Pa.	129,867	84,405	1,399	2,016	1,697	604	2,302	2,536
Seattle, Wash.	237,194	219,574	7,539	14,915	9,404	9,050	18,455	31,029
Somerville, Mass.	77,236	75,126	1,421	1,916	1,629	269	1,898	1,616
South Bend, Ind.	53,684	29,990	742	1,287	723	654	1,378	1,142
Spokane, Wash.	104,402	88,913	1,778	3,776	2,646	617	3,264	7,763
Springfield, Ill.	51,678	17,720	845	1,325	832	333	1,165	1,025
Springfield, Mass.	88,926	181,368	2,658	3,612	3,060	2,488	5,548	7,549
St. Joseph, Mo.	77,403	40,456	965	1,734	993	632	1,626	2,407
St. Louis, Mo.	687,029	699,561	13,973	23,318	16,638	6,461	23,100	21,919
St. Paul, Minn.	214,744	168,795	3,376	5,258	4,700	2,135	6,835	10,560
Syracuse, N. Y.	137,249	156,405	2,659	3,883	2,959	1,104	4,064	8,975
Tacoma, Wash.	83,743	62,826	1,442	3,837	2,413	1,161	3,574	9,936
Terre Haute, Ind.	58,157	35,279	784	1,283	782	615	1,398	817
Toledo, Ohio	168,497	249,785	2,690	4,285	3,323	1,996	5,319	10,000
Trenton, N. J.	96,815	79,162	1,190	2,333	1,954	934	2,888	2,714
Troy, N. Y.	76,813	65,062	1,478	2,005	1,687	1,004	2,692	5,073
Utica, N. Y.	74,419	66,337	1,287	1,652	1,255	400	1,655	2,114
Washington, D. C.	331,069	424,629	6,369	15,122	10,321	2,359	12,681	6,223
Waterbury, Conn.	73,141	78,422	1,250	1,583	1,302	544	1,846	4,399
Wichita, Kans.	52,450	64,029	1,050	1,661	819	240	1,060	2,238
Wilkes-Barre, Pa.	67,105	56,271	329	952	903	285	1,188	2,092
Wilmington, Del.	87,411	80,984	1,078	1,382	1,152	739	1,892	5,186
Worcester, Mass.	145,986	173,823	3,027	4,651	3,715	1,841	5,557	7,538
Yonkers, N. Y.	79,803	121,735	2,406	2,600	2,860	1,539	4,399	8,630
Youngstown, Ohio	79,066	163,704	1,481	2,109	1,399	1,641	3,040	3,949

VIII. TERRITORIES AND DEPENDENCIES

FRANK MCINTYRE

ALASKA

Economic Conditions.—With the actual construction of the government railroad now under way, new hope has been given the people of Alaska (see *infra*). Nearly every section is feeling the impetus that has been given, industrially and commercially, to the development of the resources. Tourist travel during the summer of 1915 was the greatest by far in the history of the territory.

Congressional Legislation.—Congress continued to give unusual attention to Alaska. Among the most important acts was the one reserving certain public lands of the territory for educational uses, approved March 4, 1915 (see also X, *Public Lands*), and those appropriating $2,000,000 for carrying out the provisions of the Alaskan Railroad Act passed in 1914 (see also *infra*), $200,000 for the education of the natives, $25,000 for medical relief of the natives, and $20,000 for the protection of game.

Local Legislation.—The second territorial legislature convened on March 1 and enacted 78 laws. Among the most important were a workmen's-compensation law, a law providing for a uniform ballot for territorial elections, a law defining and establishing the political status of certain native inhabitants, and an eight-hour law for all mine workers.

Education.—The number of school districts has increased with the enlarged population. The following is a summary of the white schools for the school year 1914-15:

	Schools	Teachers	Pupils
Outside of incorporated towns	31	40	961
In incorporated towns	14	65	1,542
	45	105	2,503

The legislature passed an act providing for the adoption of a uniform course of study in the public schools, for the creation of a board of education, and the election of an assistant superintendent of public instruction. More funds are urgently needed for school purposes. (See also XXXII, *Education.*)

Health.—Health conditions continue to be excellent among the white population, but there is little change to report in the health of the natives. The appropriation by Congress for their relief was helpful but not ample, and the Governor calls attention to the need for $125,000 annually to establish tuberculosis and other hospitals. With the $25,000 appropriated by Congress and $20,000 set aside from educational funds for medical relief, a new hospital will be erected at Juneau. There is now some hope that in the near future sanitary effort in Alaska will not show so striking a contrast to the excellent work being done in the Philippines and in Porto Rico.

Railroads and Roads.—The Alaskan Engineering Commission, appointed under the act of Congress of March 12, 1914, "authorizing the President of the United States to locate, construct and operate railroads in the Territory of Alaska, and for other purposes" (*A. Y. B.*, 1914, pp. 1, 239, 549), investigated and reported to the President in February upon available railroad routes in Alaska, and in April the President adopted what is known as the Susitna route, extending from Seward to Fairbanks, with a branch line into the Matanuska coal fields, and directed that the work be carried on by the Alaskan Engineering Commission (see also XXI, *Civil Engineering*). The estimated cost of the entire system was given at $26,800,000. Satisfactory prog-

ress has been made in construction, about 45 miles having been completed. There has been no other railroad construction during the year.

The Alaska Road Commission expended during the year $282,895.84. The total mileage completed on June 30, 1915, was: roads, 901.8 miles; sled roads, 577.5 miles; trails, 2,216.5 miles. The Governor again emphasizes the importance of wagon roads and trails if Alaska is to be developed on a scale commensurate with the extent and variety of its mineral, agricultural, and other resources.

Industries.—The value of Alaska's mineral production for 1914 was $19,118,080, a slight decrease from 1913, due to the low price of copper. Surveys of the coal areas, as provided by act of Congress, have been practically completed during 1915. These areas will be made accessible and cheaper fuel assured as the government railroad is completed.

Statistics for 1914 show that there were 21,200 persons engaged in the fish industry, a decline of 521 as compared with 1913, due to the lessened activity in pickling and mild-curing operations. The total investment in fisheries was $37,038,632, a decrease of $8,673 from 1913. Salmon canning constitutes the chief fish industry. (See also XVII, *Fisheries.*)

Reports show that in 1914 there were 57,872 reindeer, a net increase of 22 per cent. during the fiscal year, notwithstanding the fact that nearly 6,000 reindeer were killed for food and skins.

Commerce.—The volume of merchandise shipments, including precious metals and copper, between Alaska and the United States and between the territory and foreign countries for the fiscal year 1915 amounted to $70,113,916, an increase of $9,037,224 over 1914. Shipments of domestic merchandise from the United States to Alaska showed a decrease of $525,482, while shipments of domestic merchandise from Alaska to the United States increased $4,321,035. Shipments of domestic gold and silver increased $3,172,154. The volume of business for 1915 shows a large increase over 1914, notably in the copper production and in the value of fish shipments.

Shipments from Alaska to the United States for the last three fiscal years, ending June 30, have been as follows:

	1913	1914	1915
Gold	$14,576,015	$12,291,672	$15,348,666
Fish and fish products	17,202,287	15,201,438	19,224,849
All other	5,934,971	6,427,074	6,839,858

GUAM

Economic Conditions.—The Governor reports that the prevailing conditions at the close of 1915 show improvement generally over those existing in 1914, but by the closing of the ports of Guam to foreign flags the people have been deprived of the opportunity to develop their island's resources along natural economic lines. He urges assistance from the United States, through the medium of a guaranteed bond issue, to enable Guam to develop its agricultural, industrial and commercial trade possibilities and become self-supporting. Efforts have been made to improve agricultural methods and stock-raising in Guam, and farmers were encouraged to produce something else besides copra as a revenue-producing crop. During the fiscal year $7,391.87 was spent in new public works. Work was begun on a water system for the town of Agat. The native population is 12,968, an increase of 340 during the year.

Education.—A new school was built at Agat, but there are many populated sections of the island still without school facilities. The teaching of agriculture and domestic science has taken a large part in the curriculum.

Sanitation.—Guam has experienced an epidemic of whooping cough, and in July there were 16 known deaths from this disease. Treatment of gangosa has been continued. A marked decrease in the prevalence of hookworm has been observed, due largely to the better enforcement of the sanitary laws. The death rate decreased from 28.9 in 1914 to 19. There is no

oculist or optician in Guam, and no dentist other than one hospital dental surgeon. The people can not support private practitioners and the Governor recommends an increased staff for the Department of Health.

Commerce and Industries.—The war has caused a drop in the price of copra, comprising 63 per cent. of the total exports, which accounts largely for the falling off of total exports from $51,092.22 in 1914 to $44,349.68. The increase of $119,354.08 in imports was due largely to the increase in the marine garrison and the presence in Guam of the interned German cruiser *Cormoran*. The most noticeable increase was with Manila and with the United States.

HAWAII

Economic Conditions.—Sugar exports from Hawaii increased from 557,445 tons in 1914, valued at $33,194,912, to 640,459 tons in 1915, valued at $52,953,099, and due to this increased output of the principal crop, the territory has been notably prosperous. Having in mind the problem of food supply, the Governor requested the Bureau of Agriculture and Forestry and the College of Hawaii to make an exhaustive investigation as to what agricultural product or products might profitably be produced on which the population might depend for maintenance. They reported that they knew of no crop, other than sugar, and, to a lesser degree, pineapples, which they could recommend as a sound, economic industry in Hawaii.

About 50 members of Congress visited Hawaii soon after the adjournment of Congress as guests of the territorial Government. It was desired that they should see how intimately the prosperity and progress of Hawaii were connected with the sugar industry and how impossible progress and prosperity would be if sugar were placed on the free list in May, 1916, as provided by the tariff of 1913. The gloom that had hung over the territory in anticipation of free sugar has been largely dissipated by the President's recommendation of the retention of the duty on sugar as a revenue measure.

Savings-bank deposits show a heavy increase. Public works are being energetically carried on, particularly wharves and water-front improvements. Forty corporations were created during the year, and 11 were dissolved, leaving at the close of the year 935 domestic corporations, an increase of 29. Nineteen banks were in operation during the year. Actual expenditures for road construction amounted to $186,450.25. The construction of a modern prison in the suburban district of Honolulu was commenced during the year.

Legislation.—The eighth legislature of the territory commenced its biennial session of 60 days on Feb. 17, and its relations with the executive were most harmonious. Much important legislation was enacted, including a new compilation, revision and annotation of the laws of the territory, an act providing for the encouragement of immigration, the imposition of an additional income tax of one per cent. upon incomes of corporations and upon individual incomes in excess of $4,000, the creation of a naval militia, the appointment of commissions to compile a sanitary code and to examine into the water resources and water laws, and a law providing compensation to employees for personal injuries sustained in the course of their employment. The number of bills enacted was 226, the largest passed by any legislature in Hawaii, being 56 more than the number passed by the preceding legislature.

Population.—The estimated population on June 30 was 232,856, an increase of 21.34 per cent. since the census of 1910. The Filipinos showed the largest increase, 1,307 having been brought in during the year by the sugar planters. There was a large decrease in the number of pure Hawaiians caused by an excess of deaths over births. Due to the uncertain outlook for sugar and to the upheaval throughout Europe, no action has been taken to reopen negotiations looking to the further introduction of European immigrants.

Education.—The sum of $841,588.30 was expended for school purposes during the year. There are now 170 public schools, with 735 teachers

and 28,827 pupils, and 46 private schools, with 314 teachers and 7,702 pupils. (See also XXXII, *Education.*)

Sanitation.—Health conditions continue to improve. At the session of the legislature provision was made for the care, control, and treatment of persons addicted to the excessive use of drugs or liquor, for the increased accommodation for insane persons, and for other improvements in health and sanitary conditions. The territory has no hospitals, but renders financial assistance to some of those privately endowed. No epidemics occurred during the year. The rat and mosquito campaigns, as well as the campaign against tuberculosis, have been continued with good results. The total number of deaths was 3,556, a decrease of 151 from the previous year. The number of lepers has decreased to 638, 28 less than the previous year. Experiments with chaulmoogra oil by injection have proven beneficial to the leprous patients, but the actual curative power of this treatment is not yet proved.

Commerce and Industries.—The sugar industry will probably always constitute the principal source of wealth in Hawaii. The output and price of sugar increased notably, while the second crop in importance, pineapples, suffered a decline in price. The following table shows the values of the principal local products shipped from Hawaii to the United States and foreign countries in the last three fiscal years:

	1913	1914	1915
Sugar	$36,662,227	$33,194,912	$52,953,099
Coffee	492.883	824,512	650,486
Fruit and nuts	4,055,622	5,061,525	6,319,129

PHILIPPINE ISLANDS

Peace and Order.—A state of peace exists throughout the Philippine Islands. This has now been long continued and the present indications are such that it may be unnecessary again to refer to this condition. The administration of the Department of Mindanao and Sulu by a civil governor has been very successful and a better condition exists there now than at any time in the past. The Moros, hitherto turbulent, are now peaceful and devoting their attention to agriculture. In the last issue of the YEAR BOOK (p. 242) mention was made of the organic act passed in July, 1914, for the Department of Mindanao and Sulu, which had for its object the unification of the inhabitants thereof with the Christian people. In the Moro country, as well as in the Mountain Province, the new policy has met with gratifying results, and in pursuance of the plan, as well as to provide for a better distribution of the population, colonies for the cultivation of rice and other food cereals are being established.

Political Conditions.—The personnel of the Philippine Commission has been changed during the year by the resignation of Clinton L. Riggs, Secretary of Commerce and Police, effective Oct. 31. In the Islands there is less than the normal amount of political excitement. The people are practically unanimous in favoring the passage of the Jones bill, with some differences as to minor details. The progress of this bill through the House was reported in the last issue of the YEAR BOOK (pp. 3, 242). The Senate Committee on the Philippines gave extended hearings on the bill, and it was reported to the Senate, with amendments, on Feb. 2. It did not reach a vote prior to the end of the Sixty-Third Congress on March 4.

Education.—The activities of the Philippine Bureau of Education are directed along three chief lines, academic instruction, industrial instruction, and physical training, and during the year substantial progress was made in every line. The programme of industrial instruction has been carried out more satisfactorily than in any previous year, largely due to the measures taken to provide for standardization of industrial instruction and its closer adaptation to meet local needs. There has been a noticeable improvement in the physical development of the pupils, due to their continued participation in athletics, 95 per cent. of them now taking part.

The total annual enrollment in the public schools for the year ending in March, 1915, was 610,519, a slight decrease from the figures for the previous school year. Owing to the necessity for economy, the number of schools has not increased during the year. The average daily attendance was 441,742. From March, 1914, to the end of the school year 1915 the teaching staff increased from 9,462 to 9,845. That progress in the training of Filipino teachers continues is shown by the fact that during that period the number of Filipino teachers increased from 8,850 to 9,306, while the number of American teachers decreased from 612 to 539. The English language is now more generally understood throughout the Islands than Spanish or any other language in which there exists a general literature or in which any large part of the world's business is conducted. (See also XXXII, *Education.*)

Sanitation.—Dr. Victor G. Heiser, of the Public Health Service, who had been for twelve years in the service and for ten years director of health in the Philippine Islands, resigned on Feb. 28 to accept a position of even greater importance with the Rockefeller Institute. He was succeeded as director of health by Dr. John D. Long, a surgeon of the Public Health Service. Dr. Long has served at different times in the health service of the Philippine Islands and is thoroughly acquainted with the work accomplished and which it is desired to accomplish in the Islands.

The effectiveness of the work of the health department has continued without interruption. Great effort has been made to extend to the various provinces the excellent work which has heretofore been done in Manila. An act passed by the legislature at its session of 1914-15 reorganizing the Bureau of Health contained provisions for this purpose, and the Secretary of the Interior expresses himself as confident that great advances will be possible as a result of this. Marked progress has been made in sanitation among the non-Christians of the Mountain Province. In addition to the hospital at Bontoc, branch hospitals have been established in Cervantes, Kiangan and Lubuagan, with a doctor in attendance at each place. The Secretary of the Interior reports that "these hospitals and doctors are doing here the pioneer work which they always accomplish so successfully."

Similar work in Mindanao and Sulu was begun by the Army, and under charge of Major E. L. Munson of the Medical Corps great advance has been made. In Mindanao and Sulu three hospitals and 47 dispensaries have been established. It is found that these dispensaries and hospitals, accompanied as they are usually by a small school, have been of great assistance in the pacification of the Moros.

Mention was made in the last issue of the YEAR BOOK (p. 243) of the outbreak of cholera. Reports show that up to Feb. 3, 1915, there were 3,013 cases in the provinces and 2,165 deaths. Notwithstanding the increase in mortality owing to the cholera epidemic, the general mortality decreased, and the figure 26.97 is the lowest of any for a similar period since 1901. Some reduction in infant mortality was obtained as a result of efforts made to educate mothers in the care of children. No cases of human or rat plague have occurred since Sept. 12, 1914.

The work of segregating the lepers has been continued. On Dec. 31, 1914, there were 3,062 lepers at the Culion Leper Colony, 837 cases being admitted during the year. This was slightly more than during the preceding year, the new cases being less advanced than those heretofore admitted. As a result of the treatment of leprosy with a hypodermic mixture of chaulmoogra oil, 23 lepers were discharged apparently cured. They had been under observation for long periods. Notwithstanding the seeming result, however, the persons discharged are to be under further observation for two years.

Commerce and Industries.—The commercial outlook during the earlier part of 1914 was very favorable, but with the advent of the European War, conditions were reversed and there was a sharp decline in the value of both inward and outward shipments. The net result was a decrease

of nearly five million dollars in imports from the figures of 1913, while exports increased but about a million.

Sugar exports amounted to considerably more than the highest figure reached during American occupation, and netted a four million dollar increase with which to offset the decline in the value of other exports. The new coconut-oil industry outstripped all minor industries with a value of over two and a half million dollars. On Oct. 23 and 24 a typhoon passed over the provinces of southern Luzon, constituting the principal hemp-producing district of the Philippines, and seriously damaged the hemp crop.

As shown in the following table, exports to the United States increased considerably, owing chiefly to the resumption of sugar shipments to the American market. Exports to all other countries were uniformly smaller. In the distribution of Philippine trade during the year the United States represents about half the total value of both imports and exports.

Twelve Months Ending December	Imports		Exports	
	From the U. S.	From Other Countries	To the U. S.	To Other Countries
1911	$19,156,987	$28,867,420	$19,827,030	$24,760,261
1912	24,309,010	37,358,941	22,814,238	31,970,500
1913	26,676,261	26,636,525	16,434,018	31,338,938
1914	24,020,395	24,568,258	24,427,710	24,261,924

PORTO RICO

Economic Conditions.—Porto Rico has shared in the business disturbances resulting from the European War, but, everything considered, the year has been one of reasonable prosperity. The gains to business as a result of the war have exceeded the losses. The enhanced price of sugar brought new life to that important industry, so that notwithstanding the fear of free sugar, the plantings were largely increased, and it is expected that in 1916 the largest crop on record will be produced. On the other hand, the dislocation of foreign exchanges and the interruption of facilities for European commerce, where most of the Porto Rican coffee has always been sold, disastrously affected the coffee industry, and the coffee exports decreased in value by more than a million dollars.

From January to March there was a strike among the sugar workers in an effort to participate in the prosperity that had suddenly returned to that industry. The object of the strike was partly accomplished, wages being increased 20 per cent. during the active period of the sugar industry. They were lowered to the former scale, however, when the grinding season was over. The low wages and poverty in Porto Rico are due to the density of the population of the island, on account of which the supply of labor is greater than the demand. As a remedy for this condition, the Governor of Porto Rico, in a speech before the Lake Mohonk Conference, Oct. 22, suggested the transfer of a large number of Porto Ricans to Santo Domingo, which is almost identical in climate, physical characteristics, products, people and language.

An important event in the history of Porto Rico was the successful completion during the year of the irrigation project. The undertaking of this project, involving an indebtedness of the Porto Rican Government of $4,000,000, was due to the foresight of Governor Regis H. Post, who succeeded in having the necessary legislation passed in 1908 in the face of very considerable opposition. The project has not been prosecuted without difficulties or even doubts of its eventual financial success, but it has now been successfully completed, the work begun by Governor Post having been carried on by his successors, Governors Colton and Yager. It is estimated that the value of sugar cane produced during the first year by the aid of irrigation over and above the normal production will be sufficient to repay one-fourth of the cost of the entire irrigation project.

Political Conditions.—Mention was made in the last issue of the YEAR BOOK (p. 244) of the approval by the Committee on Insular Affairs of the House of Representatives of the bill introduced by its chairman, Mr. Jones (Va.), providing a new organic act for Porto Rico, granting collective citizenship to Porto Ricans and a larger participation in their own government. The Governor, in his annual report, recommends the passage of this bill at the current session of Congress. He again recommends the dredging of San Juan harbor and the reclamation of the adjacent swamp lands, and the admission of Porto Rico to participation in the operations of the United States militia law on equal terms with the states and territories of the Union. In his speech before the Mohonk Conference he expresses the belief that the much discussed problem of the future relation of Porto Rico to the United States is not of immediate and urgent importance, that public opinion is not ready to determine it, and that it seems wise to leave the matter for another generation to decide.

During the year Howard L. Kern was appointed attorney general, *vice* Wolcott H. Pitkin, Jr., resigned, and Paul G. Miller commissioner of education, *vice* Edward M. Bainter, resigned. Allan H. Richardson, treasurer of Porto Rico, resigned on November 3.

Legislation.—No Porto Rican legislation was enacted by Congress during the year, and comparatively little legislation of general importance was enacted in the local legislature. The two most important bills were those establishing a system of juvenile courts for the protection and care of delinquent, neglected and destitute children, and providing for the sale to laborers of certain lands belonging to the people of Porto Rico, thus encouraging them to purchase homes on easy terms.

Education.—The schools of the island are divided into five classes—rural, graded, continuation, high and special, the latter comprising agricultural, industrial and all others not otherwise classified. The necessity for economy forced a considerable reduction in expenditures for education, and practical instruction in agriculture received a set-back due to the elimination of teachers of agriculture.

The total enrollment of pupils for the year was 168,319, a decrease of over 38,000 from the preceding year. This was due to the necessary reduction in expenditures, and to the ruling of the department limiting the number of pupils allowed each teacher to 80, whereas during the previous year 150 or more pupils were enrolled under one teacher. The number of children (five to 18 years) is 419,282, which is about 35 per cent. of the total population of the island. Provision could be made for less than one-third of the rural school population, showing the magnitude of the educational problem yet to be solved. There is an imperative need to enlarge gradually the facilities for secondary education to meet the demand occasioned by the output of the rural and graded schools, but the limited resources of the Porto Rican people make the task impossible at this time.

Thirty-three school buildings were erected during the year. The average number of teachers employed was 3,461, and the number of school buildings used was 1,494. The amount expended for educational purposes during the fiscal year ended June 30, 1915, was $1,904,719.54. (See also XXXII, *Education.*)

Sanitation.—The work of sanitation was carried on with as much vigor as was possible in view of the reduced appropriations for this purpose. Unusual attention was given to studies of the water supply of the various cities and towns throughout the island. The three most important sanitary regulations promulgated were those governing the dairies and milk supply, bakeries and the sale of bread, and the protection of foodstuffs from contamination. Owing to lack of funds, the work of eradicating mosquitoes suffered. A considerable part of the duties which had previously been performed by the Insular Sanitation Service was transferred to the municipalities, which resulted in some loss of efficiency. The general mortality for the year was 19.78 per thousand, a slight increase over that for 1914. The number of deaths from tuberculosis was 1,924,

and from malaria 719, a marked increase over the preceding year.

Industries and Commerce.—The imports during the year were valued at $33,884,296, a decrease of $2,522,491, and the exports to $49,356,907, an increase of $6,254,145. The exports, due principally to the increase in the price of sugar, reached the highest total ever recorded, with the exception of 1912. Sugar exports, notwithstanding a decline in quantity of about 26,000 tons, increased in value by more than $7,000,000, due to an average increase in price of nearly $30 per ton. On the other hand, coffee exports, although increased in quantity by almost a million pounds, declined in value by more than a million dollars, due to a decline in average price of 2½ cents per pound. The total external trade increased more than three million dollars. Eighty-eight per cent. of this was with the United States. The importations indicate important changes as to the nature and source of certain commodities. The breadstuffs, dairy products, jute bags, fish and fertilizers from the United States all increased, while such importations from foreign countries decreased.

Fifteen new domestic corporations with a paid-in capital of $18,300, and nine foreign corporations were registered and authorized to transact business of various kinds. The development of agriculture is still receiving careful attention and the Board of Commissioners of Agriculture has cooperated with the Federal experiment station at Mayaguez to secure better planting, cultivation and fertilization of all crops. The value of the various kinds of fruits shipped again shows an increase in the total value of shipments, though there were decreases in several of the important items, including oranges, coconuts, and canned pineapples. These losses were nearly made up by the increase in the value of pineapples.

The total exports for the past three fiscal years are shown in the following table:

	1913	1914	1915
Sugar	$26,619,158	$20,240,335	$27,278,754
Coffee	8,511,316	8,193,544	7,082,791
Tobacco	9,012,257	8,962,647	8,987,870
Fruit	3,120,919	3,400,903	3,441,157
All other	1,839,915	2,305,333	2,566,335
	$49,103,565	$43,102,762	$49,356,907

AMERICAN SAMOA

Commercial Development. — On March 1, 1915, Commander John M. Poyer was appointed Governor of American Samoa, succeeding Governor Clark D. Stearns.

During the year the islands of the Manúa group were visited by the severest hurricane in their history, causing great destruction of property and a small loss of life. The greater part of the banana plants, breadfruit trees and coconut trees, on which the island depends for nourishment, and its commerce in copra, were destroyed. Ten thousand dollars was appropriated by Congress and $2,000 by the Red Cross Society for the relief of the destitute inhabitants.

The Governor, in his annual report, calls attention to the need of funds to increase the supply of water and fuel for the use of the Naval Station. There is still no fuel oil and no facilities for storing it.

Education.—The Governor reports that there has been no improvement in the school system and that, owing to lack of funds, the services of the only school teacher employed in Manúa were discontinued.

Commerce.—The disturbed conditions of trade on account of the international situation and the failure of the Oceanic Steamship Company's vessels to stop at the Naval Station caused the 1915 crop of copra to be sold at the lowest price for years, $85.40 per ton. Owing to the hurricane in the islands of the Manúa group, no copra is expected from those islands for several years.

IX. LAW AND JURISPRUDENCE

Francis M. Burdick and Nathan Abbott

FOREIGN JURISPRUDENCE

Legislation.—The Civil Code of Argentina has been made accessible to English-speaking lawyers in Joannini's translation, published under the auspices of the Bureau of Comparative Law.[1] Although the original code went into effect in 1871, it has been amended but twice. Perhaps the absence of statutory meddling has been due, in part at least, to the fact that the Code does not purport to be a complete embodiment of the civil law. The constitution, international treaties, the principles of analogous laws and the general principles of law are resorted to as aids in the interpretation of the Code, and seem to have given to this statute great flexibility and comprehensiveness.

The far-reaching effects of the European War are seen in the moratorium legislation of nearly every Latin-American country. Brazil has indulged also in much industrial legislation, including a new federal mining law, an executive decree providing for the "genealogical registry of reproductive animals," and another organizing the Service of Pastoral Industry. Colombia, by an amendment of its constitution, has reëstablished the Council of State with authority "to act as a supreme consulting board for the Government in administrative matters," to act as a legislative drafting bureau and reforming agency, and to act as a supreme administration court. Clearly, our sister republic has not borrowed this institution from us. But in her codification of the law of trade-marks and unfair competition she seems to have profited from our experience, and her decision to revise her Code of Civil Procedure shows that procedural troubles are not peculiar to our states. Honduras displays a progressive trend in requiring industrial establishments employing more than 100 persons and located more than two kilometres (a mile and a quarter) from any public school to maintain primary schools. Panama adheres to lotteries as a means of raising funds for educational and charitable purposes, and to the exclusion of Chinese, Syrians, and Turks, as well as gypsies, vagabonds and consumptives. Uruguay, unlike Argentina, indulges in frequent amendments to her Civil Code, and many articles were modified by the legislation of 1914.

The effect of the war upon the statute law of European countries is marked. In Belgium the tide of social-reform legislation, which had brought in workmen's courts, child-welfare laws and radical reforms in the Commercial Code, has been arrested; and nearly the entire country has been subjected to the ordinances of the German governor-general.[2] In France,[3] Germany [3] and Great Britain but little legislation has been enacted, except that needed to keep governmental machinery in motion in war time. Switzerland has reorganized her Federal Council with a view to securing "permanency in the conduct of the central government so essential to the maintenance of consistent courses of action in both domestic and foreign affairs"; and has provided for a national administrative court which promises to have a great

[1] See 1 *Am. Bar. Assoc. Jour.* 91 for a full description of this work and of the legal field covered by it.

[2] A translation of these ordinances down to March 21, 1915, is presented in 1 *Am. Bar Assoc. Jour.* 459.

[3] For an account of emergency legislation in France and Germany, see 59 *Solicitors' Jour.*, pp. 126, 202, 215, 236, 378, 594, 610, 626.

influence in strengthening the central government at the expense of the cantons. The constitutional amendment under which it is organized was certainly adopted by the votes of the party which believes in nationality as distinguished from confederation. Pure food and factory regulation are the subjects of two important federal ordinances in Switzerland, and federal legislation has dealt with the sickness and injuries of workmen. Since the outbreak of the war legislation, even in this neutral country, has been turned from the channel of social betterment to that for securing national neutrality, monetary credit, and complete independence. German ordinances for the government of Russian Poland are as drastic as those promulgated in Belgium.[1]

A new departure in Danish constitutional law was taken when King Christian, on June 5, gave his assent to amendments abolishing the privileges theretofore accorded to the most highly taxed voters, and instituting woman suffrage.

A sketch of the prize courts of Austria-Hungary, which have been organized in accordance with the Hague Conference rules, will be found in 59 *Solicitors' Journal*, p. 438. Their place of meeting is Pola, but that port has been so effectually closed by the English, French and Italian navies that the new courts appear to have had little to do.

Judicial Decisions.—While China has reorganized its judicial system, and the United States has expressed its desire to assist the reform policy by relinquishing extraterritorial rights as soon as the new system is in successful operation, the reorganized courts have not yet shown what they can accomplish. Meanwhile, the United States Court for China continues to exercise jurisdiction over divorce actions brought by American citizens domiciled in China for divorce from their Chinese wives (Richards *v.* Richards, May, 1915; 1 *Am. Bar Assoc. Jour.* 467).

Japanese courts find plenty of occupation in the litigated cases brought before them. They refuse to give a narrow and technical construction to code provisions, but attempt to carry out the legislative spirit so as to make the code stand for "justice and fairness" (Sup. Ct. O. 229, Taisei 3; see, too, Tokyo Dist. Ct., 3 Ka. 156). All members of a mob are liable indiscriminately for crimes committed by the mob, and it was held error for the trial court to attempt to shift liability from the members to the ringleaders (Sup. Ct. 2219, Taisei 3). Damages for mental distress to a parent by the killing of a son are recoverable and are a cause of action entirely distinct from the pecuniary damage caused by the same act of the defendant (Sup. Ct. 2332, Taisei 3). While the liability of a master for the torts of his servant is not as broad in Japanese as in English law, the owner of an automobile who lets it for hire with a driver is held bound to select a skilled driver and give him the best instruction and to assure himself that the driver is a "man of thoughtfulness and integrity, responsible for his each and every act and line of conduct" (Tokyo Dist. Ct. 3 Ne 156, Taisei 3).

On the continent of Europe, the volume of judicial decisions has been greatly diminished by the war. Even in England there has been a remarkable shrinking in criminal litigation. Lord Reading bore testimony to this on his visit to the United States, and the statistics of English criminal courts support his view (see 59 *Solicitors' Jour.*, p. 151). Various causes appear to have contributed to this result. Public houses are compelled to close at an earlier hour than formerly. The vigorous internment of aliens has removed a large body of needy and wandering persons from which the criminal classes were recruited. Large numbers of the turbulent spirits have enlisted and are now indulging their propensity to violence at the expense of the enemies of their country instead of its peaceful citizens. Of course, enough of crime continues to keep the machinery of the criminal courts from rusting. On the whole, the criminal courts of England continue to show mercy to persons charged with crime, even when the offense is alleged to consist in giving aid to the King's enemies. The civil courts also show entire fairness to-

[1] A brief account of them may be found in 59 *Solicitors' Jour.*, p. 689.

wards aliens. In a group of cases under the title of Porter *v.* Freudenberg (1915, 1 K. B. 857), the Court of Appeal held that the status of an alien enemy is determined not by his nationality but by the place in which he resides and does business. Such an enemy cannot sue in the King's courts. He may be sued in them. Then he has the right to enter an appearance and to defend the action, as well as to appeal from an adverse decision. The same court has decided that a company incorporated in England was not an alien enemy, though all of its directors and all of its shareholders save one were German subjects residing in Germany (Continental Tyre and Rubber Co. *v.* Daimler Co., 1915, 1 K. B. 893). Although English prize courts have been flooded with cases, many of which presented novel questions, they are maintaining the traditions of Lord Stowell's era for learning and for fairness. In the case of the *Möwe* (1915, P. 1), it was held that whenever an alien enemy thinks himself entitled to any relief under the Hague Convention, he is entitled to appear in the Prize Court and press his claim. In the *Miramichi* case (1915, P. 71), the court decided that a cargo shipped by a neutral to a German buyer before the declaration or imminence of war between Germany and Great Britain was not subject to seizure and condemnation, because under the bill of lading title had not passed to the alien enemy buyer. In another case where title had passed, the cargo was held liable to condemnation, though pledged to a British subject (1915, P. 52); the opinion deserves careful study by any one who is disposed to doubt the fairness of British prize courts.

While as noted last year (*A. Y. B.*, 1914, p. 249) the English courts are disposed to apply the doctrine of Rylands *v.* Fletcher without flinching, Goodbody *v.* Poplar Borough Council (84 L. J. K. B. 1230) shows that they do not favor an extension of the principle of that famous case. Although one who instals electricity on his land is liable if it escapes therefrom and does damage, he is not liable if the electricity fires gas which escapes from a third person's land to his, without negligence on his part. Mr. Dicey objects to the House of Lords decision in Local Government Board *v.* Arlidge (1915, A. C. 120), as tending to exempt administrative officers from their common-law liability for good-faith acts in excess of their legal authority (31 *Law Quar. Rev.* 148), but surely he must approve the following comments of Lord Shaw on the much abused term "natural justice":

> In so far as the term means that a result or process should be just, it is harmless though it may be a high-sounding expression; in so far as it attempts to reflect the old *jus naturale*, it is a confused and unwarranted transfer into the ethical sphere of a term employed for other distinctions; and in so far as it is resorted to for other purposes, it is vacuous.

This decision of the House of Lords, in Mr. Dicey's opinion, "may lead to the result that any government department which is authorized by statute to exercise judicial or quasi-judicial authority may, or rather, must exercise it in accordance, not with the procedure of the law courts, but with the rules which are found to be fair and convenient in the transaction of the business with which the department is officially concerned." This, he contends, is a considerable step towards the introduction into England of something like the *droit administratif* of France. However, he consoles himself and those who prefer the common-law doctrine, with the fact that so long as the ordinary law courts can deal with any actual and provable breach of the law committed by a servant of the Crown, the existence of a true *droit administratif* is impossible in England.

The distinction between a trade-mark which secures to the owner a monopoly of its use and the unfair use of a trade name not susceptible of monopoly but which has become a distinctive mark of goods offered to the public by the introducer of the name is admirably discussed and unanimously applied by the House of Lords in Spalding & Brothers *v.* Gamage (84 L. J. Ch. 449). That a surname may be registered under the English trade-mark rules of 1906, is held *in re* Cadbury Brothers, Ltd. (1915, 1 Ch. 331, 84 L. J. Ch. 242).

A like decision was made as to the use of a geographical name (*In re* Berna Commercial Motors, Ltd., 1915, 1 Ch. 414, 84 L. J. Ch. 416); but the word "classic" was denied registration as a trade-mark, on the ground that it was merely a laudatory epithet and in no way distinctive of the goods to which it was applied (W. N. Sharpe, Ltd. *v.* Solomon Bros., Ltd., 84 L. J. Ch. 290).

While Parliament has power to authorize a person to injure his neighbor by the maintenance of a nuisance, such authority will not be inferred from a statutory license to do a particular act or carry on a particular business, unless such act cannot be done or business carried on without being a nuisance. The same doctrine was applied to a license given by one land owner to another to carry on the business of mining coal (Pwllbach Colliery Co., Ltd. *v.* Woodman, 1915, A. C. 634, 84 L. J. K. B. 874). A covenant by a merchant who sold his business to a former competitor, not to carry on the business within two years thereafter in any part of Great Britain and the Isle of Man, or in France, the United States, Russia, Spain, Berlin or Vienna, was held to be too wide. But as the covenant was severable, it was upheld as to business carried on in Great Britain and the Isle of Man, such restriction being reasonably necessary for the buyer's protection. The true proposition of law was said to be that covenants in restraint of trade are void with an exception in favor of those which do not interfere with trade to an unreasonable extent (Goldsoll *v.* Goldman, 1915, 1 Ch. 292, 84 L. J. Ch. 228, affg. 1914, 2 Chy. 603, 84 L. J. Ch. 63). An action for false imprisonment will not lie against an employer for keeping a workman in a coal mine during the hours which he has contracted to spend there (from 9:30 a. m. to 4 p. m.), though he refuses to work under the contract and demands permission to leave the mine; he is subject to the maxim *volenti non fit injuria* (Herd *v.* Weardale Steel C. & C. Co., 1915, A. C. 67, 84 L. J. K. B. 121). That a theatre ticket is more than a license to occupy a seat in the theatre, and includes a contract not to revoke the license arbitrarily, is held in Hurst *v.* Picture Theatres, Ltd. (1915, 1 K. B. 1), distinguishing Wood *v.* Leadbitter (13 M. & W. 838), and affirming a recovery of damages (£150) for assault and false imprisonment by a ticket holder who was ejected from the theatre by defendants under a mistaken belief that he had not paid for his seat. Delay on the part of the seller of a ship in delivering it at the stipulated time is not excused by bad weather; but delay caused by the universal coal strike in England of 1912 is attributable to *force majeure* (Matsonkin *v.* Priestman & Co., 1915, 1 K. B. 681, 84 L. J. K. B. 967). A purchaser of goods is justified in refusing to accept them when such acceptance would have rendered him guilty of violating the Royal Proclamation against trading with the enemy (Duncan, Fox & Co. *v.* Schrempft & Bonke, 1915, 3 K. B. 355).

The Workmen's Compensation Act, 1906, continues to supply the courts with abundant cases. Many of them turn upon the application to their facts of the statutory phrase "accident arising out of employment." As a rule, the courts are disposed to decide doubtful cases in favor of the employee; Proctor *v.* S. S. Serbino (1915, 3 K. B. 344), holding a chief engineer within this clause, though the accident happened to him outside of the hours assigned to him for labor; see, too, Webber *v.* Wansbrough Paper Co. (1915, A. C. 51, 84 L. J. K. B. 13, 127). In Lane *v.* W. Lusty & Son (1915, 3 K. B. 230), a boy employed to push trucks of wood from a machine was held to be acting within his employment when trying to clear out the blower of the machine, inasmuch as his employer, seeing him idle, had told him to "go and find a job." Nor is it easy for the employer to escape liability under this statute by showing that the employee is an independent contractor (Roper *v.* Hussey-Freke, 1915, 3 K. B. 222, 84 L. J. K. B. 1351); here the employee, whose wages were 45s. a week with house and garden and who was helped by his sisters and a boy whom he hired, was held not to be an independent contractor but a workman. This case may well be compared with State *v.* Dist. Ct. of St. Louis Co. (128 Minn. 43, 150 N. W. 211, 7 Neg.

& Comps. Cases, 1076, Dec., 1914) and cases digested in note.

Questions as to the respective powers of the Dominion and provincial parliaments of Canada are coming before the British Privy Council with increasing frequency. While interesting to us, decisions in such cases are not precedents for our courts, because the federal government of Canada is organized under a different constitution from ours. How radical that difference is in the incorporation of companies may be learned by any one who will read carefully John Deere Plow Co. *v.* Wharton (1915, A. C. 330, 84 L. J. P. C. 64), holding that the provincial parliament of British Columbia acts *ultra vires* when requiring a company incorporated under a Dominion act to be licensed or registered under the laws of the province as a condition of carrying on business therein.

DOMESTIC JURISPRUDENCE

Legislation.—The flood of statutory law has run high during the year, as regular sessions of Congress and of legislatures in 42 states and a special session in another have been held. The number of bills proposed was about 60,000, of which some 17,000 were passed by the legislative bodies and more than 15,000 successfully ran the gauntlet of the gubernatorial veto (see also II, *Popular Government*). As might be expected they vary greatly in importance and excellence. Many of them have only a local or special application. Perhaps, the most extraordinary example of this class is found in Ch. 77 of the laws of Tennessee, which removes the infancy disability of a specified young woman in order that she might begin the practice of law before reaching 21. The influence of hyphenated Americans seems to be responsible for No. 138 of the laws of Pennsylvania (1915) requiring legal notices in certain counties to be published in German, Italian and Yiddish daily newspapers. The act has been held unconstitutional in the lower courts.

Administration of Justice.[1]—Congress has instituted a new policy in matters of appeal (Ch. 2) by allowing an appeal to be taken from the higher court of a state to the Supreme Court, although the decision below was in favor of the Federal authority or against the validity of state legislation as repugnant to the Federal Constitution or laws. This would permit an appeal in such a case as Ives *v.* South Buffalo Ry. (201 N. Y. 271), which held the workman's-compensation law of New York to be in violation of the Federal as well as the state constitution. It has also carried forward the simplification of procedure (Ch. 90) by providing that if a suit at law is brought in equity, or an action in equity is instituted on the law side of the court, amendments shall be allowed so that the case may proceed as though properly launched; and by permitting equitable defenses in actions at law. Several state legislatures have shown themselves alive to the popular demand for greater expedition and simplicity in procedural matters. Perhaps the most carefully considered statutes on this topic are those of Michigan, Pennsylvania (No. 202 and 381) and Vermont (No. 90). Minnesota (Ch. 31), West Virginia (Chs. 74 and 78) and Wyoming (Ch. 133) have added important contributions. New Jersey has undertaken to do for her chancery courts what she did in 1912 for her law courts, by giving the Chancellor power to prescribe rules and simplify procedure, his regulations thus made to supersede statutory and other provisions theretofore existing.

Missouri has altered the common-law rules applicable to joint tort-feasors in two important respects. The new rules permit the plaintiff in such cases to settle with, discharge and release one wrongdoer without impairing his right against the others, and establish the right of contribution between the defendants in the same manner as though the action were founded on contract.

Under the New York Industrial

[1] A very full review of the year's legislation is found in the Report of the Committee of the American Bar Association on Noteworthy Changes in Statute Law, printed in the *Annual Report* for 1915.

Commission Act of 1915 (Ch. 674) the validity of any provision of the state labor laws cannot be raised as a defense in an action thereunder, but can be brought in question only in a special action in the Supreme Court for that express purpose. Oregon has instituted the experiment of a small claims department in each district court. For claims of not more than $20, the maximum of fees is 75 cents. The pleadings and procedure are to be informal and attorneys are taboo (Ch. 327).

Statutory Revision and Drafting.—The staggering accumulation of statutes is inducing state legislators to provide for the revision and consolidation of existing laws by carefully selected and well paid commissioners (see No. 214, Conn. L. 1915, and No. 242, V. L. 1915), and also for legislative reference and drafting bureaus (see No. 10, V. L. 1915). The demand for such bureaus and the improvement which they may effect in the wording of statutes so as to make the intent of the legislator clear and to avoid needless litigation and confusion are set forth most persuasively in the report of a special committee on legislative drafting to the American Bar Association (see *Annual Report* for 1915).

Uniformity of State Laws.—The commissioners from the various states for securing uniformity of state laws have achieved notable success during the year. This is attested in part by the number of uniform acts adopted by state legislatures, and in part by the cordial commendation given to these acts by the judiciary. Judges are striving to give to these acts such interpretation as to effectuate their purpose of making and keeping uniform the laws of the states enacting them. The Uniform Negotiable Instruments Act is now the law in 47 jurisdictions; the Uniform Warehouse Receipts Act, in 31, having been adopted in 1915 by Arkansas (Act 273), Idaho (Ch. 31) and Oklahoma (288); the Bills of Lading Act in 10, having been adopted in 1915 by Idaho (Ch. 16) and Vermont (149); the Uniform Sales Act in 12, Illinois (p. 604), Pennsylvania (241) and Nevada (159) having added it to their statute books in 1915. During the year also Pennsylvania (15) and Wisconsin (358) have adopted the Uniform Partnership Act; Vermont (101), the Uniform Desertion and Non-Support Act and (164) the Uniform Workmen's Compensation Act; Nevada (36), the Uniform Probate of Wills Act; and Wisconsin (270), the Uniform Marriage Act and (275) the Uniform Acknowledgment of Deeds Act. Drafts of acts were approved by the conference of commissioners at their meeting in August on several topics.

LEGAL ETHICS AND PROCEDURE

Legal Education.—The most notable event of the year in the field of legal education was the opening of a law school exclusively for women at Cambridge, Mass., to be conducted under the patronage but not as part of Radcliffe College. This is in response to the demand of young women college graduates for instruction in law that will qualify them to meet the responsibilities of women under the changing views of their political status.

Legal Ethics.—As regards the legal profession there has been a steady gain in the effort to raise the ethical standards of the bar. The questions submitted to, and the answers of, the committee on legal ethics of the Association of the Bar of New York are published in several of the law journals, and also may be had in book form, gratis, of the West Publishing Co.

Legal Procedure.—The several state bar associations, judging from their annual reports, have discussed the subject of reform in legal procedure, and the impression from these reports is that there is a growing opinion that this reform should not come from the legislatures direct, but from the courts in the form of simple rules of procedure. "Those who make the shoe do not feel it pinch, and those who feel it pinch do not know how shoes are made," seems to be the principle involved.

This is the attitude of the English courts, according to the words of Lord

Reading, Lord Chief Justice of England, in his recent remarks to the Bar Association of New York. According to the report in the New York *Times* of Oct. 15, he said:

> We now strive to get at the merits; to allow no technicalities to prevent the court from perceiving the true facts and arrive at a just decision. We believe that is the true principle that should animate the courts of justice. The time came with us when all those technicalities in the administration of the law were abolished. Lord Russell said that the time has passed when right and justice and the substance of the thing is to be sacrificed to the science of artificial statement.

Criminal Procedure.—Among the decisions of the period covered by this issue two stand out as justifying general comment. The so-called Frank case (see *Criminal Law, infra*) illustrates how difficult it is for an honest court and jury to work when subject to the pressure of public clamor and the public press. After all the prolonged litigation, the tragic end of the case was by the hands of a mob rather than those of the public executioner or in jail. The whole affair has shown up some of the worst features in American criminal procedure. The so-called Thaw case has come to an end by the discharge of Thaw from confinement as an insane person. The steady determined pursuit of this one end aided by efficient counsel and unlimited money illustrates another weak point in our criminal procedure. And the long delayed execution of the sentence in the Becker case shows how under our procedure the moral effect of sentence and execution of a criminal may be so far modified by prolonged appeals that a criminal may become a martyr, in the estimation of many of the public.

American Bar Association Journal.—In January, 1915, the American Bar Association began to issue a *Journal* "of the announcements and transactions of the Association, which might also include some of the works of various affiliated bodies, which from time to time have been organized under its auspices, such as the Association of American Law Schools, the American Institute of Criminal Law and Criminology, and the Conference of Commissioners on Uniform State Laws."

JUDICIAL DECISIONS[1]

CONSTITUTIONAL LAW

Police Power.—By act of 1913 in Ohio a motion-picture censorship board was created whose consent must be had before the exhibition of pictures. The plaintiff, engaged in furnishing and publishing news through the medium of motion pictures under the name of the "Motion Weekly," sought an injunction to restrain the board from enforcing the act. It was contended that the nature of plaintiff's service brought motion pictures into practical and legal similitude to a free press; that it spread knowledge and moulded public opinion on political, social, educational and religious questions; and that the act violated the freedom of the press guaranteed by the constitution. The U. S. Supreme Court, in Mutual Film Corp. *v.* Commission (Feb. 23, 1915, 236 U. S. 230), while admitting the usefulness of motion pictures, denied that the exhibition of them as practiced by plaintiff was part of the press of Ohio. And they further held that the possibility of evil owing to their attractiveness justified the act as an exercise of the police power. This case was followed in Mutual Film Co. *v.* Chicago (Cir. Ct. of Appeals, May 20, 1915, 224 Fed. 101).

A statute forbidding the sale of liquor to any student in attendance at any public or private institution of learning in the state of Michigan is within the police power, nor is it unconstitutional because its effect is to deny to adult students privileges enjoyed by other adult citizens (People *v.* Damm, Sup. Ct. Mich., Dec. 19, 1914, 149 N. W. Repr. 1002).

In Booth *v.* Indiana (May 3, 1915, 237 U. S. 391), the U. S. Supreme Court upheld the constitutionality of an act requiring mine owners to pro-

[1] As in previous issues of the YEAR BOOK, the cases selected for comment bear on everyday questions rather than on legal practice and technicalities.

vide wash rooms for their employees, as being within the police power and not class legislation. "The specific regulation for one kind of business, which may be necessary for the protection of the public, can never be the just ground of complaint because like restrictions are not imposed upon other kinds of business."

A law of the state of Oregon providing that, as the collecting of fees from workers for furnishing employment or information leading thereto results in imposition and extortion, it shall be unlawful for any employment agent to ask or receive a fee for furnishing such employment or information, is a valid exercise of the police power. "The honest must suffer with the others in regulating the business of the general class." (Wiseman *v.* Tanner, Fed. Dist. Ct., Wash., Dec. 24, 1914, 221 Fed. 694.)

In Price *v.* Illinois (June 21, 1915, 238 U. S. 446), the U. S. Supreme Court sustained the validity of the Illinois pure-food law prohibiting the sale of food containing certain preservatives. "The legislature," the Court said, in exercising its police power, "is entitled to estimate degrees of evil, and to adjust its legislation according to the exigency found to exist."

The Supreme Court of Montana in Colville *v.* Fox (June 1, 1915, 149 Pac. Repr. 496) sustained an act authorizing the destruction of fruit affected with contagious diseases, in this case apple scab, a dangerous and contagious disease. The court held that such destruction was not a taking of property for public use and without due process of law, and that the protection of the horticultural industries of the state from insect pests or contagious diseases was within the police power.

The New York Housing Act provides that two-thirds of the owners of the frontage on one side of a block may, with the approval of certain authorities, have such block set aside solely for residences. After such approval, the owner of a lot affected applied for leave to change a building into an undertaking establishment. The validity of the act was raised and in People *v.* Roberts (May 1, 1915, 90 Miscl. Reps. 439) the New York Supreme Court held it unconstitutional, as being neither within the police power, nor a valid exercise of eminent domain.

Due Process of Law.—A Wisconsin statute provided that the upper berths in sleeping cars should not be made up unless they were to be used. The unconstitutionality of this statute was declared by the U. S. Supreme Court in Chicago M. & St. P. R. R. Co. *v.* Wisconsin (June 21, 1915, 238 U. S. 491). The right to space in a sleeping car is property which the owner may sell, but is not obliged to give to a passenger. Such legislation works an arbitrary taking of property without due process of law. "The owner's right to property is protected even when it is not actually in use, and the company cannot be compelled to permit a third person to have the free use of such property until a buyer appears." Moreover it cannot be justified as a measure so promotive of public health as to be within the police power.

Is a statute prohibiting Greek letter fraternities and other secret societies in the educational institutions of a state constitutional? This question was raised by an applicant for admission to the Law School of the University of Mississippi but who was denied because he would not sign a pledge that he did not belong to a secret society. The pledge was required by a regulation of the University trustees. The U. S. Supreme Court, in Waugh *v.* The Trustees (June 1, 1915, 237 U. S. 589), held both were valid, and did not deprive complainant of property, liberty or happiness without due process of law. Moreover, such legislation is evidence of the feeling in the state that such societies impaired the efficiency of the institutions, and it is not within the province of the court to entertain conjectures to the contrary.

Freedom of Contract.—Has a state legislature the power to prohibit a provision in a contract of employment, whereby the employee agrees not to join a labor organization during the time of the employment? This question was answered in the negative by the U. S. Supreme Court on Jan. 25, 1915 (Coppage *v.* Kansas,

236 U. S. 1). Such legislation is prohibitive of freedom of contract.

The "Grandfather Clause."—The "grandfather clause" in its most usual form exempts from educational and property tests for voting those who could vote in 1866, and their descendants. It resembles the "old soldier" clauses of Alabama, Georgia and Virginia. The two most recent decisions on such clauses deal with the one in the Oklahoma constitution, and another in a Maryland statute. In both cases the U. S. Supreme Court, on June 21, 1915, in Guinn *v.* United States (238 U. S. 347) and in Myers *v.* Anderson (238 U. S. 368), held the legislation violative of the Fifteenth Amendment, because it bases the qualifications of voters on the right of the citizen or his ancestor to vote at a date prior to the adoption of the Fifteenth Amendment, the standards then existing now being illegal by the self-operating force of the amendment.

Race Segregation.—That there should be a separation of the white and colored races at certain times and in certain places has been declared by legislation and in the courts. Thus, marriages between white and colored persons are restricted; they may not ride in the same public conveyance, or attend the same schools. The theory that supports their separation in conveyances, schools, and family life would seem to apply to legislation that will prevent them from living at close quarters.

As noted in the last issue (*A. Y. B.*, 1914, p. 254), the Baltimore, Winston and Atlanta segregation ordinances were held unconstitutional. In neither of these cases was there any provision saving vested rights. The ordinance in a recent Louisville case, Harris *v.* Louisville (Ct. of Appeals, Ky., June, 1915, 177 S. W. Repr. 472), as in the previous cases, prohibited whites from moving into blocks where more than one-half the residents were colored, and colored persons from moving into blocks where more than one-half the residents were whites. But the Louisville ordinance provided that "nothing herein contained shall be construed to prevent any person who, at the date of the passage of this ordinance, shall have acquired, or possessed the right to occupy any building as a residence, place of abode, or place of assembly from exercising such right." This clause was held to distinguish the Louisville ordinance from those previously considered, and the act was held not unconstitutional. A similar result was reached in two cases in Virginia, Hopkins *v.* Richmond and Coleman *v.* Ashland[1] (Sup. Ct. of Appeals, Va., Sept. 9, 1915; 86 S. E. Repr. 139).

In Mobile Railroad Co. *v.* Spenny (Sup. Ct. of Appeals, Ala., May 13, 1915, 68 So. Repr. 870) the validity of the so-called "Jim Crow" legislation was raised in a novel way. A white sheriff was obliged to board a train with a colored prisoner. If he kept his prisoner with him in a car for whites, he was liable to a penalty, and if he left his prisoner among negroes, he was exposed to damages for his escape. He took his prisoner into the smoking apartment for whites and was ejected by the conductor, who had assigned him to a place with negroes, which he was authorized to do by the act. The officer sued the road and had a verdict in the trial court. On appeal the judgment was reversed by two of three judges, and on petition for a review it was held by four out of seven judges, that the statute did not apply to such an exceptional case; that it was within the discretion of the conductor as to which car or apartment he should assign the officer; that he had no cause of action; and, that such construction did not render the act unconstitutional as denying to the white officer the equal protection of the law.

Alien Labor.—Section 14 of the New York labor law, providing that only citizens of the United States may be employed in the construction of public works, was invoked in connection with the construction of the subway in New York City. In People *v.* Crane (Dec. 14, 1914, 165 App. Div. 449) it was held by the Supreme Court, Appellate Division, to be unconstitutional, in that it did not give

[1] The court refers to an article on "Segregation Ordinances" by 1 *Va. Law Register*, N. S., pp. 330-356.

equal protection of the laws to all persons. But in the Court of Appeals (Feb. 25, 1915, 214 N. Y. 154) this was reversed, on the ground that the state has a right to discriminate in the distribution of its property and favors, and may exclude aliens from participation therein.

The result arrived at by the Appellate Division was the same as that reached by the Federal District Court of Arizona on a similar statute, in Raich *v.* Truax (Jan. 7, 1915, 219 Fed. 273), on the ground that aliens are persons entitled to the equal protection of the laws with citizens. But this decision was reversed on appeal by the U. S. Supreme Court, Nov. 1, 1915.

Hours of Labor.—The New York Act of 1913 prohibiting work by women in factories between the hours of 10 o'clock at night and 6 o'clock in the morning was upheld by the Court of Appeals in People *v.* Charles Schweinler Press (Mar. 26, 1915, 214 N. Y. 395). In this case the court overruled its former position, which was not founded on evidence but rather on lack of evidence, which had been attained for the present case by the State Factory Investigating Commission, of which the court took notice. This evidence abundantly established the injurious effect on women of labor at night.

The New York law which provides that every person employed in a factory or mercantile establishment shall have at least 24 consecutive hours of rest in every seven days was held a valid exercise of the police power by the Court of Appeals in People *v.* Klinck Packing Co. (Feb. 5, 1915, 214 N. Y. 121).

The "Hours of Service" act of Congress, classifying telegraph offices into two classes, one open night and day and the other only during the day time, and declaring that no operator shall be on duty in the former class for more than nine hours in any 24-hour period, nor for more than 13 hours in the latter class, is a valid classification (United States *v.* Grand Rapids & I. Ry. Co., Fed. Cir. Ct. of Appeals, Sixth Circuit, June 30, 1915, 224 Fed. Repr. 667).

Wage Payments.—In *Ex parte* Crane (Nov. 23, 1914, 154 Pac. Repr. 733), the District Court of Appeals of California passed on the validity of the act of 1911, providing that wages shall be payable at least once in each month, and not withheld longer than 15 days, and that a violation of the act should be a misdemeanor punishable with fine. Crane had been arrested and imprisoned for violating the act, and sought release by *habeas corpus* proceedings. He was discharged on the ground that the act violated a provision of the constitution providing that no person should be imprisoned for debt in any civil action, on mesne or final process, unless in case of fraud. The act provides a means of enforcing the collection of a debt by imprisonment and to this extent was unconstitutional.

Civil Rights.—The right of the purchaser of a theatre ticket was considered in Woolcott *v.* Shubert (Sup. Ct., N. Y., May, 1915, 90 Miscl. 474). Plaintiff, a dramatic critic, had been refused admission to defendant's theatres, although he had a ticket, on the ground that he noticed their plays unfavorably. This case was a motion for an injunction under the Civil Rights Act of 1913, which gave to all persons equal rights in places of public amusement and for damages for denial thereof. The court held the act constitutional, although it provided a penalty for its violation, and issued an injunction. The Appellate Division reversed this finding, without defining the rights of the proprietors of theatres to exclude ticket holders, on the ground that plaintiff must establish his right by a suit at law before he would be entitled to an injunction restraining the proprietors from excluding him from their theatres.

Married Women's Rights.—The Tennessee act of 1913 (ch. 26) to remove the disabilities of coverture from married women, provided "that married women be and are, hereby fully emancipated from all disability on account of coverture, and the common law as to the disabilities of married women and its effect on the rights of property of the wife is totally abrogated." Prior to her marriage in 1909, plaintiff's wife owned certain land. After marriage plaintiff and his wife separated and he

did not contribute to her support. He brought suit against a tenant of the land to recover rent, claiming that his right thereto vested in him by the marriage and prior to the act, and that as regards his rights the act was invalid. The Supreme Court of Tennessee (Parlow *v.* Turner, July 23, 1915, 178 S. W. Repr. 766) held the act did not destroy any vested right of the husband, as his claim to rents was purely contingent.

The Jitney Bus a Common Carrier.—The constitutionality of a statute aimed at regulating the "Jitney bus," providing that it shall be unlawful to carry passengers for hire in motor-propelled vehicles on public streets until a bond shall be given for each vehicle to pay all damages for injuries to persons or passengers, was affirmed by the Supreme Court of Washington on April 22, 1915, in the case of State *v.* Howell (147 Pac. Repr. 1159) as a proper regulation of carriers within the police power. The Court said: "The Act in question does two things of importance as legislative functions, viz.: (1) it recognizes a new sort of common carrier; and (2) it enacts a system of regulation of such common carriers. We may assume that there are conditions existent which justify legislation for their regulation." There were similar decisions in Texas (Greene *v.* Antonio, June 28, 1915, 178 S. W. Repr. 6), and in California (*Ex parte* Cardinal, June 28, 1915, 150 Pac. Repr. 348).

Protection of Migratory Birds.—The Migratory Bird Act of March 4, 1913 (*A. Y. B.*, 1913, p. 487), finds little favor with the courts. In United States *v.* McCullagh (Dist. Ct., Kans., March 20, 1915, 214 Fed. Repr. 288), it is held to be unconstitutional; it not being within the power of the Federal Government to legislate over game, property in and control over which is exclusively in the state where the game is in transit. The court says that the argument of necessity of action on the part of the Federal Government arises, not so much from any want of power to control on the part of the several states, as from dissatisfaction as to the manner in which such plenary power possessed by the several states is exercised. A similar conclusion was reached by the Supreme Judicial Court of Maine, July 21, 1915, in State *v.* Sawyer (94 Atl. Repr. 886).

Ex post facto Laws.—The decision of the U. S. Supreme Court that electrocution is less painful and more humane than hanging will probably be accepted as final. Besides holding that the electric chair is not as cruel as the gallows, the court also dealt with the subject of *ex post facto* laws. Plaintiff committed murder, and subsequently a statute was passed prescribing electrocution in place of hanging for murder. The Court decided that the new law did not violate the constitutional inhibition on *ex post facto* legislation (Malloy *v.* South Carolina, April 5, 1915, 237 U. S. 180).

STATUS

Aliens.—A Chinese student who enters the United States is entitled by treaty to the privileges accorded the subjects of the most favored nations. Students of other nations may follow any legitimate vocation contemporaneously with or after their studies are completed. The Secretary of Labor made a rule that at the conclusion of his studies a student may not remain and follow any other exempt occupation without a grant of the privilege by an immigrant officer. *In re* Tam Chung (Dist. Ct., Mont., May 29, 1915, 223 Fed. Repr. 801) the Federal Court held the authority given the Secretary of Labor to formulate such a rule was inconsistent with the treaty. For a similar decision see also United States *v.* Lau Chu (Cir. Ct. of Appeals, N. Y., June 3, 1915, 224 Fed. Repr. 446), where an unsuccessful effort was made to deport a Chinese student who was obliged to work here because his father could not send him money.

A peculiar result of the European War is seen in United States *ex rel* Schlimm *v.* Howe (Fed. Dist. Ct. S. D., N. Y., March 29, 1915, 222 Fed. Repr. 96). The relator, an alien, had committed an offense for which he was held for deportation to Germany, from which country he came here. Because of the war there was no regular passenger service from New York.

He applied for *habeas corpus* to determine the legality of his detention. His application was refused. The court said his continual detention, until there is some opportunity of returning relator, is unfortunate but not illegal.

Annulment of Marriage for Fraud.—Where marriage is regarded merely as a contract it may be annulled at the suit of one who was induced to give consent by a false representation as to a material fact, if after discovery of the fraud there has been cessation of the marital relation. In Robert *v.* Robert (Nov., 1914, 87 Miscl. 629) the Supreme Court of New York annulled a marriage on proof by the plaintiff that she was induced to marry defendant by his representation that if she would give him $1,100 of her savings he would add money of his own and they would open a hotel. They were married, he took her money and was not seen afterwards.

In Bahrenburg *v.* Bahrenburg (Dec., 1914, 88 Miscl. 272) the same court refused to annul a marriage because of defendant's false statement that her child had been born in lawful wedlock. It appeared that plaintiff knew defendant had been unchaste, and had not made any effort to verify her statement as to the time of her prior marriage, and the court felt that the plaintiff did not place reliance on the defendant's representations.

In Sobel *v.* Sobel (Dec., 1914, 88 Miscl. 277) the same court annulled the marriage because of defendant's statement to plaintiff prior to the marriage that certain symptoms which he displayed were due to a cold. In fact, defendant had tuberculosis, and knew it. Plaintiff would not have married had she known defendant's condition. The parties had separated, and there were no children. The court took into account the danger to the plaintiff from contagion, and the effect of the disease upon children.

In Trask *v.* Trask (Oct. 1, 1915, 95 Atl. Repr. 352) the Supreme Judicial Court of Maine applied a less liberal doctrine and refused to annul a marriage which the petitioner alleged he had been induced to enter into by defendant's having falsely misrepresented herself to have been chaste, and concealed a former marriage and divorce. In Allen *v.* Allen (Sept. 20, 1915, 95 Atl. Repr. 363) the Court of Chancery of New Jersey refused to annul a marriage because one of the parties had concealed the fact that he was afflicted with hereditary insanity.

Divorce.—A wife was granted a divorce by the court below because of the extreme cruelty of her husband. He was in the coal business and his home was near his coal yards. It was shown that he came into the house with dirty boots, would sit by the stove and smoke and knock ashes from his pipe and throw matches about, and spat on the stove and floor. He also indulged in cards for small stakes at a small saloon. The Supreme Court of Michigan, in Cunningham *v.* Cunningham (June 14, 1915, 153 N. W. Repr. 8), reversed the decree, on the ground that the evidence did not make out a case of extreme cruelty, although it appeared that the wife did the house work.

Custody of Children.—While the case of Focks *v.* Munger (Sup. Ct., N. M., May 14, 1915, 149 Pac. Repr. 300) does not introduce any new principle, it is of value in view of the growing practice of adopting children whose parents are unknown. In 1906, the petitioner obtained a divorce from her husband and was awarded the custody of her boy, then three years old. Immediately afterward the father carried off the boy, and the mother lost all trace of him, until seven years later, when she found him living in Albuquerque, N. M., with the defendant, who had adopted him. The defendant had received him from the father, who had ceased to support him; had made diligent effort to find the mother; had become greatly attached to the child; and was admitted to be a proper person and capable of providing for him. The natural mother brought *habeas corpus* proceedings against the adopting mother, and was awarded the child, although the latter preferred his mother by adoption, the court reversing the judgment of the court below.

Adoption.—The query whether one can adopt as a child one who is older than the adopting party is answered in the affirmative in Millville *v.* Wickham (Ct. of Civ. Apps., Tex., Oct. 8, 1914, 169 S. W. Repr. 1123). In this case plaintiff was the foster-mother of one Pace, who died leaving a certificate in a fraternal order, which Pace in his lifetime had ordered to be paid to plaintiff as his heir after he had formally adopted her. The order refused to do this on the ground that "heir" meant a blood relation, and the trial court sustained this contention. But the appellate court held that there was nothing to prevent one from adopting an adult as his legal heir and that the adopted person has the same rights as a natural child.

Mental Capacity to Change Domicile.—The law is called on to determine the mental capacity sufficient to fix responsibility, notably in the commission of crimes, and the execution of wills and contracts. In Cadwalader *v.* Pyle (May 8, 1915, 148 Pac. Repr. 655) the Supreme Court of Kansas had to decide what was the mental capacity sufficient to enable one to change his domicile; that is, not only actually to change from one place to another, but mentally to elect to abandon one place and fix upon another with the intent to make it his domicile. The problem is complex. The effect of change of domicile may be to vary testamentary powers and the devolution of personal property. In the case in question if deceased was domiciled in Wyoming when he died, his property would go to six persons; if in Kansas, to which he had moved, then his mother would take all. After considering the evidence the court thought deceased had capacity to change his domicile, although he did not have capacity to make a deed or a will, he having a fairly clear idea of his condition, surroundings and purposes.

Rights of Pupils in Schools.—There have been several decisions dealing with the relative rights of parents and school authorities, of which the following are significant:

Wulff *v.* Wakefield (June 21, 1915, 109 N. E. 358) was an action to recover damages for excluding plaintiff from the high school in defendant town. Plaintiff and another pupil were striving to lead their class. The teacher detailed to the rival the duty of correcting plaintiff's written work by use of a "key book" of answers, and she marked plaintiff's answer "wrong." Plaintiff made two further trials at intervals of a week and a half with the same result, and plaintiff refusing to attend school was suspended. The trial court directed a verdict for defendant, and the Supreme Judicial Court of Massachusetts affirmed the verdict, but expressed its "disapproval of the practice of setting a rival pupil in judgment upon the work of an eager and zealous competitor."

Wooster *v.* Sunderland (March 24, 1915, 148 Pac. Repr. 959) was a proceeding by mandamus in which plaintiff sought to compel the defendants to reinstate him in the Fresno high school, from which they had expelled him. At a meeting of the students, in the school assembly hall, the plaintiff asserted that the school building was unsafe in case of fire; denounced the defendants for prohibiting a class affair called "a donkey fight," which usually resulted in personal injuries to participants; and secured the passage of a resolution to the effect that the defendants do certain things as to a district bond issue. The court below found for defendants and the District Court of Appeals, of California, affirmed this finding, saying that the effect of plaintiff's conduct was calculated to belittle defendants, to engender a feeling of disrespect in the minds of the students, and to promote insubordination on their part.

Effect of Foreign Moratoria on Contracts.—In Compagnie Generale *v.* Herzig & Sons Co. (Sup. Ct., N. Y., March, 1915, 89 Miscl. 573), the plaintiff was a French corporation, and the defendant a New York corporation. By French decree the time for performance of contracts was extended beyond the time when the action was commenced. The court found that the contract sued on was made in France and was a French contract, and that the defence which set up the French moratorium was sufficient.

Goldmuntz v. Spitzel (Jan., 1915, 91 Miscl. 148) was before the same court as the preceding case and involved the effect of a moratorium on contract obligations made and performable in Belgium. The action was in New York on a bill of exchange drawn, accepted and payable in Belgium, where, before its maturity, by decree the due dates of all bills were postponed indefinitely. The court ordered judgment for the defendants, saying that the contract could not have been enforced in Belgium, and should not be here, unless a moratorium was repugnant to natural justice or good morals, which the court did not think it was.

In this connection reference may be made to a decision connected with the war but not on status. By the criminal law of Louisiana, whoever maliciously prepares an explosive or combustible substance and puts it in any place with intent to destroy a ship, although he has not set fire to the substance, shall be subject to a severe penalty. Defendant was indicted under this law and was successful in the trial court in getting off on a demurrer. On appeal (State *v.* Helle, June 7, 1915, 68 So. Repr. 735) the Supreme Court of Louisiana said the indictment charged defendant with preparing an infernal machine with the intent to destroy a French ship sailing from New York to Havre; that he put the machine in a box addressed to a person in Paris; that he put the box so addressed in the Faust Hotel in New Orleans, intending to have the box and contents carried to New York and placed on a ship of the French line; and that the machine would explode in 6½ days. The court decided that "place" meant the thing intended to be destroyed; that the legislature did not contemplate such a case as was before the court, and affirmed the finding in the trial court in favor of the defendant.

MASTER AND SERVANT

Employers' Liability.—Under the Workmen's Compensation Act of Michigan compensation may be had for injuries arising "out of" as well as "in the course of" the employment. In Hopkins *v.* Michigan Sugar Co. (Sup. Ct., Mich., Jan. 4, 1915, 15 N. W. Repr. 325) plaintiff had been awarded compensation for the death of her husband, who was injured by slipping and falling on the ice while on his way home after his day's work. The deceased was defendant's chief engineer, supervising the installing of machinery in, and the operation of, six of its plants, located in various places. On the day of the injury deceased had been to Sebewaing to visit one of defendant's factories, and was injured at the close of the day after his return to Saginaw when about to board a street car. The court reversed the award on the ground that the accident resulted from a risk common to all; and not from a hazard peculiarly incidental to or connected with deceased's employment, and shown to have a causal connection with it, or to have arisen out of it.

On the other hand in Hulley *v.* Moosbrugger (Feb. 18, 1915, 93 Atl. Repr. 79), in dealing with a similar question the Supreme Court of New Jersey sustained a judgment for plaintiff for injuries received in dodging a playful blow from a fellow workman. The deceased was on his way to a bin for material to be used on a job. The court said there could be a recovery where the accident is the result of a risk reasonably incident to the employment, and held that it was an accident arising out of the employment. The court intimated that as defendant employed young men and boys, who as a matter of common knowledge, indulge in rough diversion among themselves, the attack might be a risk incident to the employment for that reason.

In Hunnewell's Case (Sup. Jud. Ct., Mass., Feb. 27, 1915, 220 Mass. 351) an employee had been awarded compensation for partial disability leaving compensation for future total disability open for future decision. The appellate court held that this could be done under the Massachusetts act. The injury was to an eye, and was followed by recovery so far as concerned the eye. But injury to the eye induced a mental incapacity for which the second award was made. This second award could not have been made if the primary

award had been final. It would have become *res adjudicata*. But having been made with the qualification as to future compensation, and being such an injury as would have been actionable if due to a battery, the court sustained the award.

Englebretson *v.* Industrial Accident Commission (151 Pac. Repr. 421) and Employer's Assur. Corp. *v.* the Same (151 Pac. Repr. 423), decided Aug. 7, 1915, by the Supreme Court of California, contain an important ruling in cases under the California Workmen's Compensation Act, which authorizes the Commission which passes on claims to disregard "technical rules" of evidence. The Supreme Court holds that an award made on "hearsay" testimony is not on sufficient testimony—the rule against "hearsay" testimony not being technical but founded on experience, and the courts should not lightly extend the exceptions to it.

By the penal law of New York, it is a misdemeanor for a person to obtain employment by aid of any false statement in writing as to his previous employment. In Kenny *v.* Union Ry. Co. (March, 1915, 166 App. Div. 497) a Commission had awarded a weekly allowance to a widow and children for the death of the husband and father who was in the employ of the defendant, which contested its liability on the ground that the deceased was not in its employ, for the reason that he had made a written application for employment by aid of which he received employment, but in which he had falsely stated that he was unmarried and had never been employed on any railroad. He had been working as conductor for defendant for three months when injured, and at the time of his employment was married and previously had worked for another railroad. The Supreme Court, Appellate Division, affirmed the award, on the ground that the deceased was in defendant's employ under a contract which was good but could have been avoided by defendant; and he was actually employed although he had committed a misdemeanor.

Liability for Voluntary Assumed Risk.—One, Porter, lost his life while trying to rescue some fellow-workmen who were overcome by black damp in a coal mine. His administrator sued to recover damages from the company who employed Porter and who operated the mine, and recovered a judgment in the trial court. On appeal, in Taylor Coal Co. *v.* Porter (May 6, 1915, 175 S. W. Repr. 1014), the Court of Appeals of Kentucky reversed this judgment, it not appearing that the defendant company had been negligent in the conduct of its mine. The court admitted that if Porter had attempted to rescue one who was in peril because of defendant's negligence recovery might be had; but affirmed that no person who is free from negligence himself can be made liable in damages on account of injuries sustained by a person, who, at his request, comes to the assistance of one who is in peril.

In American Express Co. *v.* Terry (Ct. of Appeals, Md., May 5, 1915, 94 Atl. Repr. 1026) the plaintiff in the lower court, who had volunteered to stop a runaway motor truck of the Express Co., sought to recover damages from the defendant. The truck was going at an increasing speed in the direction of wagons, men and horses, and plaintiff intervened to save life. The Appellate Court sustained a judgment for the plaintiff in the trial court.

Jurisdiction in Maritime Cases.—In the case of Berton *v.* Dry Dock Co. (Fed. Dist. Ct., N. J., Jan. 13, 1915, 219 Fed. Repr. 763) it appears that the plaintiff was a machinist working on a vessel which had been floated upon the defendant's dry dock, and there raised clear of the water for the purpose of being repaired; and that the dock, while capable of being towed about on the water, was not used to carry passengers or freight, but was lowered and then raised for the purpose of lifting vessels clear of the water. The suit was brought in a court of New Jersey, under a state statute establishing an elective schedule of compensation for injuries. Defendant had removed the action into the Federal court, on the theory that it was within the maritime jurisdiction of the court, and asked that the plaintiff's remedy be against the dock, as a vessel. The court held that the dock was not a

"vessel" within the Federal Employers' Liability Act. As to the cause of action the Court said that if it were maritime in its nature the Federal and state courts would have concurrent jurisdiction, but that his right did not rest upon a common-law claim in tort for defendant's negligence, but upon an obligation imposed by the state statute upon the employer by force of the contract of hiring, an obligation unknown to the common or to the maritime law. For both reasons the court ordered the suit remanded to the state court.

Because of the diverse laws in the several states and countries for regulating the liability of employers for injuries to their employees, the question what law shall be applied and what shall be the measure of liability may become one of great practical importance. This is seen in the case of Faras *v.* Lower California Development Co. (Dist. Ct. of Appeal, Cal., Aug. 16, 1915, 151 Pac. Repr. 35). Plaintiff, a citizen of Mexico, was a sailor on a vessel owned by a British subject, and was injured while on the vessel when it was tied to a wharf in San Diego, Cal. The suit was begun in a state court of California and after a verdict for $12,000 for plaintiff and denial of a new trial, defendant appealed, on the ground that the cause of action was solely for a Federal court, being between aliens, and also was maritime in its nature. The court rejected both grounds, saying that it was one of which the state court had concurrent jurisdiction, and as nothing was alleged or shown in the course of the suit that the contract of hiring was made outside the state, that its law and not the law of Great Britain was applicable as regards the measure of liability of master to his servant.

Liability of Labor Unions.—Decided on another ground, but illustrating the liability of labor unions where an individual would be liable, is Powers *v.* Journeymen Bricklayers' Union (Sup. Ct., Tenn., Dec. 21, 1914, 172 S. W. Repr. 284). The defendant Union comprised all the bricklayers in a community, and at the first of the year fixed the wages of its members for the year; and the bricklayers all agreed thereto by becoming members. The union notified all contractors of the scale of wages so fixed, knowing that it would be the basis of estimates in contracts to be made. A contractor employed members of the union at 62½ cents per hour, according to a notice from the union. It appeared that after notice and employment, the union changed the rate to 56¼ cents per hour but did not notify the contractor, and he continued to pay at the higher rate. The excess payment was $322, for which he sued the union, and lost; but on appeal the decision was reversed, on the ground that after the union changed its scale, the notice of the higher rate thereafter operated as a continuing misrepresentation, and having been relied on by the contractor to his loss, raised a cause of action against the union.

PROPERTY AND CONTRACT

Copyright.—Under the copyright law the owner of copyrighted music has the exclusive right to control the performance of it "publicly for profit." In John Church Co. *v.* Hilliard Hotel Co. (Cir. Ct. of Appeals, Feb. 9, 1915, 221 Fed. Repr. 229) the owner of a copyrighted musical composition sought to enjoin its performance in the dining room of the Hotel Vanderbilt in New York City. The District Court had issued an injunction but the order was reversed by the Court of Appeals. The Court thought the performance was not for "profit," there being no admission fee charged, although it was a means of attracting custom, and persons could not go into the room without buying something to eat. If that were sufficient then church officials in which a copyrighted anthem was played would be liable to a fine, because there is an expectation that the congregation will be increased by making the service more attractive.

A similar conclusion was reached in Herbert *v.* Shanley Co. (May 1, 1915, 222 Fed. Repr. 344) by the Federal District Court for the Southern District of New York. In this case the defendant operated a "cabaret," and employed a singer who had purchased a copy of plaintiff's copyrighted song,

to sing it to the accompaniment of a small orchestra.

In F. A. Mills *v.* Standard Music Roll Co. (Fed. Dist. Ct., N. J., July 1, 1915, 223 Fed. Repr. 849) the plaintiff, it appeared, was engaged in the publication of musical compositions and the defendant in the manufacture of perforated music rolls serving to reproduce mechanically the musical features of such compositions. The plaintiff licensed defendant to use the copyrighted musical compositions "in the manufacture of its sound records." The Federal court held that the defendant could not print and distribute without additional charge, on separate sheets of paper, the words of the composition in the boxes containing the rolls.

In Macmillan Co. *v.* King June 24, 1914, Fed. Dist. Ct., Mass., 223 Fed. Repr. 862) the defendant was charged with infringing the plaintiff's copyright of Professor Taussig's *Principles of Economics.* The defendant alleged that he was a teacher and made use of the copyrighted book; that each of his pupils was expected to have a copy;

> that in advance of each conference relating to the subject with his pupils, he prepared for them brief memoranda or outlines covering the ground to be dealt with at the conference; that, if any sheet is taken away after the conference, an account is kept; and it is returned the next week; that all are subsequently destroyed; that none are sold or leased; that they are not bound or paged; that no use is made of them, apart from the use above described; that they go into the pupils' hands only on the understanding that they are to be used by the individual pupil and returned as above; that, except as stated, they are not published or distributed; and that his regular fees for instruction are fixed without regard to the use of the memoranda, and are the same whether the memoranda are used or not.

From the evidence at the hearing the court found that substantial portions of the book were on these sheets; that defendant offered his pupils substantially what they would have obtained if following the university course of instruction for which the book was the appointed textbook; that the memoranda constituted a "version" of the book which by the copyright law the plaintiff alone had the right to make; that typewriting the extracts constituted a "printing"; and, that although not sold, there was a "publishing" sufficient to constitute an infringement of plaintiff's copyright.

Eminent Domain.—Usually whatever a trespasser affixes to land becomes the property of the one who owns the land. The case of the Atchison, T. & S. F. Ry. Co. *v.* Richter (March 10, 1915, 148 Pac. Repr. 478) illustrates an exception to this rule. The railroad company, although it could have taken the land by eminent-domain proceedings, instead entered thereon with force and ejected the occupant who had a prior right, and proceeded to lay tracks and add various structures of a permanent character. Later the company took the land by eminent domain. If the fixtures belonged to Richter he should be paid therefor as well as for the land, especially as the company was a wrongdoer. The Supreme Court of New Mexico held that the land owner was not entitled to any compensation for the fixtures.

Realty Titles.—In Meighan v. Rohe (Sup. Ct., N. Y., App. Div., Feb. 19, 1915, 166 App. Div. 175) plaintiff sought to register her title to land under the provisions of the Torrens law. Plaintiff and her father had been in actual, open and notorious possession of the land for more than 20 years. The court held that she must also prove that her possession was coupled with a claim of title adverse to the true owner before she could gain title by adverse possession. The court further held that such a title was not "marketable," and unless it was, could not be recorded under the Torrens law.

Valentino *v.* Schautz (Ct. of Appeals, N. Y., Sept. 28, 1915, 216 N. Y. 1) raised the question whether the right of flowage belonging to the owner of a dam carries with it the right to take ice from the water which the dam causes to collect over the land of an adjoining owner. The court answered this question in the negative, overruling an early New York decision, and affirming the conclusion of the Appellate Division below.

Deeds of Gift.—The facts of a case may suggest that a donor intended

to convey his property by gift or that he intended to convey by will. According as the transaction is a present or a future transfer may settle liability for an inheritance tax, as well as questions of title. In Innes *v.* Potter (Sup. Ct., Minn., July 9, 1915, 153 N. W. 604) the owner of a certificate for a large block of stock indorsed on it an assignment to defendant; wrote a letter to her informing her of the transfer to her, inclosed certificate and letter in an envelope, which he sealed and indorsed with a direction to a friend that he was to hold and deliver to defendant "only in case of the death of" the donor. The judgment of the trial court in favor of the donee was affirmed by the appellate court, which said that a valid gift might be made to a third person with instructions to deliver the *res* to the donee after the donor's death. In Williams *v.* Kidd (July 30, 1915, 151 Pac. Repr. 1) an opposite result was reached by the Supreme Court of California, where the subject matter was a deed of real estate, placed in the hands of a third party for delivery after the executor's death to one who was ignorant of the transaction. The court found in this case that there was no intent to pass a present title, with the right of enjoyment postponed; nor was it testamentary in effect.

Joint Bank Deposits.—A savings bank by-law permitted the secretary to waive the production of the pass book. A deposit stood in the joint name of husband and wife and the bank paid it to the husband alone. The wife sued the bank; held, in Brooks *v.* Erie County Savings Bank (Sup. Ct., N. Y., App. Div., July 7, 1915, 154 N. Y. Supp. 692), two judges dissenting, that, as under the form of deposit the bank was authorized to pay to either husband or wife, the bank was not liable to her after paying the husband, in the absence of evidence that the bank knew the husband was not entitled to draw the deposit.

TORTS

Jurisdiction.—By statute no railroad corporation in Minnesota may collect more than two cents per mile per passenger; the violation of this act is a felony. The validity of this statute was raised in suits on behalf of the stockholders, and a Federal court enjoined the corporation from complying with the statute, pending the final determination of the litigation. The attorney-general of Minnesota and the State Railroad Commission were also enjoined from enforcing the statute. While the injunction was in force the corporation was indicted, and in various ways endeavored to set up the injunction as a defense to the criminal proceeding. This was unavailing in the trial court and the corporation was found guilty. The corporation was under a cross fire. If it disregarded the injunction it would be in contempt; if it obeyed, then it was liable to a heavy penalty. On appeal from a rule denying a new trial of the criminal action, the Supreme Court of Minnesota, June 25, 1915, in State *v.* Chicago, M. & St. P. Ry. Co. (153 N. W. Repr. 320) holds that the injunction of the Federal court suspended the operation of the statute until final determination of the suit to settle its validity, and that for the state court to proceed against officials who had been ordered by a Federal court not to conform to the statute was an arbitrary disregard of the authority of the court first acquiring jurisdiction, and tended to confuse and defeat the orderly and effective administration of the law. The same principle was applied in R. M. Rose Co. *v.* Southern Express Co. (Fed. Dist. Ct., Ala., May 24, 1915, 223 Fed. Repr. 868).

Patents and Trade-Marks.—Another stage in the effort of a patentee to maintain the price of a patented article has been reached in Victor Talking Machine Co. *v.* Straus (Dist. Ct., S. D. N. Y., March 23, 1915, 222 Fed. Repr. 524). The patentee for a royalty equivalent to the price of the article, paid in advance, gave the defendant the right to use the article during the life of the patent, when it was to become the defendant's, if he had observed the terms of the license. The defendant sold the articles for less than the fixed price, and plaintiff claimed he had no right to do this under the terms of the license. But the court did not

take this view, but held that the transaction was a sale in effect, and did not interfere with defendant's right to sell at any price. This decision substantially modifies the rule of the "Sanatogen" and similar cases (*A. Y. B.*, 1913, p. 263).

In Great Atlantic & Pacific Tea Co. *v.* Cream of Wheat Co. (Dist. Ct., S. D. N. Y., July 20, 1915, 224 Fed. Repr. 566), the so-called "Cream of Wheat Cases," it was held not to be within the Clayton Act for a manufacturer of an article not a necessity, and who has a monopoly in a trade name under which it is sold, to refuse to sell to a dealer who resells at retail at less than the regular prices charged by other dealers. (See also XIII, *The Conduct of Business.*)

Animals and Trespass.—During the year there have been several decisions of interest to the owners of animals. In Sabin *v.* Smith (Dist. Ct. of Appeals, Cal., Feb. 27, 1915, 147 Pac. Repr. 1180) the right to shoot a dog, valued at $350, when attacking defendant's chickens, of much less value, was sustained. The court said "the right to kill a dog found trespassing and endangering property is not affected by the relative value of the dog and the property being injured. It can hardly be contended that the defendant was bound to stand by and mentally calculate the value of the chickens destroyed, and await action until such value approximately equaled that of the dog."

But a result *contra* was reached in Kershaw *v.* McKown (Ct. of Appeals, Ala., April 6, 1915, 68 So. Repr. 559). In that case the owner of a goat worth less than $2.00 killed a dog which attacked it worth $50, and the court applying the principal of relative values held he was not justified.

In Rimbance *v.* Beiermeister (Sup. Ct., App. Div., N. Y., July 1, 1915, 154 N. Y. Sup. 333) it is held that one inflicting wanton and malicious injury to a trespassing dog may be liable to exemplary damages.

The Springfield, Mo., Court of Appeals in Evans *v.* McLalin (April 3, 1915, 175 S. W. Repr. 294) held that if a land owner desires protection for his crops from trespassing chickens he must fence them out.

Libel.—In a city directory an asterisk was placed before a name to indicate that the person named was colored. Plaintiff's name appeared with an asterisk before it, whereas she was of pure Caucasian descent. She brought an action for libel. The Supreme Court of Alabama held that defendant was properly acquitted if in the trial court he satisfied the jury that the mistake was due to the printer, had been corrected, and was without malice. (Jones *v.* Polk, 67 S. Repr. 577.)

Liability for Fire.—In Adamson *v.* Greenwood Cemetery (Sup. Ct., App. Div., N. Y., Dec. 4, 1914, 164 App. Div. 832) the question of liability of a property owner in New York City, who negligently fails to comply with an order of the fire commissioner, whereby loss by fire to a third party ensues, is raised. Defendant had refused to install a system of automatic sprinklers. There was a fire on his premises. Plaintiff sued to recover the expenses of putting it out. The lower court sustained a demurrer to the complaint. But the Appellate Division reversed this, and intimated that for such negligence there might, under Sec. 761 of the city charter, be liability both for expenses of fighting the fire, and, if the fire spread, for the loss by adjoining owners.

Liability for Defective Food.—In Liggett & Myers Tobacco Co. *v.* Cannon (Sup. Ct., Tenn., Aug. 25, 1915, 178 S. W. Repr. 1009) the question is raised whether one who buys a piece of tobacco from a retailer, and is injured by chewing a bug imbedded in the tobacco by the manufacturer can recover damages of him. The court holds that he cannot, as there was no contract by plaintiff with defendant, and no tort liability as there was no evidence of negligence. It was argued that tobacco is a food, and as such was within the rule that the manufacturer thereof is liable for defects to the ultimate consumer; but the court refused to class tobacco as a food.

The view of the Tennessee court as to liability for the sale of defective food accords with that of the Supreme Court of Kansas in Parks *v.* Pie Co. (Nov. 14, 1914, 93 Kan. 334).

In this case plaintiff sued the manufacturer of a pie for damages for the death of her husband from ptomaine poisoning resulting from eating a pie made by defendant, sold to a dealer, and by him sold to the deceased. The court said: "A manufacturer or dealer who puts human food upon the market for sale or for immediate consumption does so upon an implied representation that it is wholesome for human consumption. Practically he must know it is fit or take the consequences if it proves destructive."

Rights of Public Officers.—A police officer, in the exercise of his duties may do without liability something which would impose liability if done by others. One who contributes to his own injury is usually without remedy against the one causing the injury. A police officer in pursuing a speed violator himself ran his motorcycle at over 50 miles per hour, and received serious injuries by colliding with a wagon negligently left without lights in a public highway. In the trial court the defendant owner of the wagon prevailed. On appeal, the Court of Civil Appeals of Texas held (Keevie *v.* Ponsford, Feb. 25, 1915, 173 S. W. Repr. 518) that as plaintiff was violating the law he was guilty of contributory negligence, and could not recover.

Where, after the relator had obtained a decree restraining a city from removing him from his office in the classified civil service, the city abolished the office to circumvent the decree and immediately recreated the like office, the Supreme Court of Washington held that he was entitled to be reinstated in office and to his back salary (State *v.* Seattle, Dec. 30, 1914, 83 Wash. 91). The court admitted the power to abolish an office after it was not needed, or for economy, but to permit it to be done with the sole purpose of getting rid of the man but not the office would make civil service a farce.

Rights of Hotel Guests.—When a guest has been assigned a room in a hotel, it is under his exclusive control, subject to the right of the landlord or his servants to enter and care for it. His right of privacy is to be respected, and he also is entitled to respectful and decent treatment from the landlord and his servants. In Florence Hotel Co. *v.* Bumpus (June 30, 1915, 69 S. Repr. 566) the Supreme Court of Alabama affirmed the judgment of the trial court for plaintiff, who sued for damages, because defendant's servants had wrongfully invaded his room and treated him in a disrespectful manner.

Injuries from Revolving Doors.—What are the rights of a person who, on entering a store, passes through a swinging or revolving door? Partial answers are given in two Massachusetts cases. In Smith *v.* Johnson (Oct. 24, 1914, 219 Mass. 142) plaintiff's finger was crushed by a swinging door at the entrance to defendant's store. The door could be pushed either way. Plaintiff was preceded by another person, and put up her hand to check the recoil, and her finger was caught between the edge of the door and the door frame. The Supreme Judicial Court affirmed the judgment for defendant in the trial court. In Buzzel *v.* R. H. White Co. (Jan. 8, 1915, 220 Mass. 129), a case involving injuries from a revolving door, the same court reached the same conclusion.

CRIMINAL LAW

CHESTER G. VERNIER

Legislative and Judicial Tendencies.—The enactment of numerous laws for the protection of labor and of women and children, and for the eradication of frauds and anti-social practices (such as the use of intoxicating liquor and narcotic drugs) is the significant feature of the year. The regulation of business and the welfare of prisoners have received increased attention. The courts have decided many cases in criminal law of great popular and professional interest.

Regulation and Protection of Business.—"Blue-sky" laws[1] to prevent fraud in the sale of securities have

[1] Violation of laws referred to in this article is a misdemeanor unless otherwise indicated.

been passed in Iowa (151)[1], Kansas (195), Michigan (63), Oregon (495), North Dakota (115) and South Dakota (657). The "blue-sky" law of Arkansas has been held constitutional (Standard Home Co. *v.* Davis, 217 Fed. 904), while the West Virginia law has been declared invalid (Bracey *v.* Darst, 218 Fed. 482). The circulation of false statements derogatory to the financial standing of banks is a crime in Delaware (332), Kansas (114) and North Carolina (345). Indiana (674) and Oregon (324) have regulated the use of trading stamps. In Idaho (194) it is a felony to make unlawful use of the name "bank," and in New Jersey (454) a misdemeanor for a bank agent to ask favors for issuing loans. Many laws regulate business transactions with farmers (see XVII, *Agricultural Legislation*). It is a misdemeanor to picket business establishments in Washington (646), and to use a fac-simile of the state's great seal in an advertisement in Delaware (687). New York (1382) forbids the fraudulent use of a family name in business. Kansas (303) has passed a "split-fee" law for physicians and Missouri (99) for lawyers. In Washington (227) it is a misdemeanor to operate a "jitney-bus" without a permit. In Alaska hotels must keep a register of travelers. It is extortion in the second degree in Hawaii (221) for an agent of a public utility unlawfully to exact anything of value from patrons. Public-utility corporations in Indiana (117) are forbidden to divert funds to conceal income or assets.

Prohibition of Fraudulent Practices.—Fraudulent advertisement of goods and services is prohibited in California (1252), Colorado (191), Hawaii (147), Idaho (75), Illinois (365), Kansas (4), Minnesota (447), Missouri (267), Montana (256), New York (1760), North Carolina (291), and Oklahoma (103). Issuing a check without sufficient funds is a misdemeanor in Colorado (196), Delaware (682), Idaho (286) and North Dakota (59); a felony in California (731), Nebraska (583) and Kansas (115), if check is for $20 or more; and punishable as larceny in Washington (460). Bulk sales of merchandise in fraud of creditors are regulated in Iowa (273), Kansas (475) and New Jersey (377). It is a misdemeanor to procure board and lodging with intent to defraud in Alaska (39), Oklahoma (359) and Washington (695); to secure credit by false statements in writing in Oklahoma (366) and Wyoming (74); to represent falsely that goods are union-made in California (816); and to use a union label or card without authority in Missouri (405). Impersonating one who is physically defective to obtain money is a misdemeanor in Illinois (384), Indiana (598), Maine (88), Missouri (267), and Washington (236). Connecticut (1989) and Oklahoma (101) prohibit fortune telling. Fraudulent procurement of relief under the mothers'-pension law is a misdemeanor in Oregon (97) and Nevada (151). Fraudulent practices in connection with the initiative, referendum and recall are discouraged in California (51, 55) and Washington (186, 197) by making them misdemeanors and felonies.

Protection of Women and Children.—Statutes dealing with desertion and non-support of wife and children, commonly known as "lazy-husband" laws, have been passed in Alaska (27), Illinois (470), Idaho (201), Oklahoma (247), Wyoming (66), Indiana (654), Minnesota (468), Oregon (359), South Dakota (717), Hawaii (116); the grade of the offense varies. In Connecticut (1930) it is a felony for one spouse to abandon the other and cohabit with a third person. A divorced husband neglecting to pay alimony in Nebraska (380) is guilty of a misdemeanor. California (143), Illinois (366), Nebraska (408), North Carolina (345) and Oregon (273) have legislated to prevent infant blindness. Several states have passed child-labor laws and laws limiting the hours of labor of women (see XVI, *Labor Legislation*). In Miller *v.* Wilson (236 U. S. 373) and Bosley *v.* McLaughlin (236 U. S. 385) California eight-hour day statutes for women have been held constitutional; these noteworthy cases establish legislative power to

[1] The figures in parentheses following the name of a state refer to the pages of the Session Laws of 1915.

shorten women's work-day to an extent heretofore believed unallowable by many. Anti-cigarette laws were enacted in Michigan (42) and Oklahoma (387). In North Carolina (100) it is a misdemeanor to give intoxicating liquor to an unmarried minor under 17, and in New York (1017) to furnish narcotic drugs to children under 16. South Dakota (418) forbids hypnotising a minor without the consent of parents or guardian. In Oklahoma it is a felony to marry to escape prosecution for seduction and then abandon the wife within two years without cause. Illinois (368), Michigan (501), and North Carolina (294) have passed acts relating to dependent and delinquent children (see also XV, *Child Welfare*).

Protection of Adult Employees.—Congress has passed a law to promote the welfare of American seamen, among other things abolishing imprisonment as a penalty for desertion (see also XX, *Merchant Marine*), and many state laws have been enacted for the protection and welfare of labor (see XVI, *Labor Legislation*). A statute requiring corporations to give discharged employees true statements of the reason for dismissal was held unconstitutional in St. Louis & S. W. Ry. Co. *v.* Griffin (171 S. W. 703 (Texas)). The New York statute requiring manufacturing and mercantile establishments to grant employees 24 consecutive hours of rest every week was held valid in People *v.* Klinck Packing Co. (52 N. Y. L. J. 1925 (Ct. App.)).

Prostitution and Sex Crimes.—Abatement and injunction acts to lessen prostitution have been passed in Colorado (360), Idaho (127), Illinois (371), Indiana (523), Iowa (331) and Michigan (481). The Minnesota Abatement and Injunction Act was held valid in State *v.* Gilbert (147 N. W. 953). Alaska (101) has forbidden the importation and exportation of females for immoral purposes. In U. S. *v.* Holte (236 U. S. 140) it was held that a woman could conspire to have herself transported in interstate commerce in violation of the White Slave Traffic Act, Justices Day and Lamar dissenting. An interesting dictum stated that a woman could be guilty of the substantive offense as well. The belief that the woman is always the victim is declared an illusion. A California (1022) statute makes the acts technically known as *fellatio* and *cunilingus* a felony.

Protection of Health, Safety and Morals.—California (213), Indiana (300), Nevada (156) and Washington (533) have regulated the size of sheets and other matters relating to hotels. Acts regulating the manufacture and sale of mattresses and stuffed bedding have been passed in California (1267), Colorado (381), Connecticut (1936), Illinois (375), Montana (377), and Oregon (250). Acts relating to the manufacture and sale of foods, drinks, etc., have been passed as follows: Alaska (1), serving condemned food; Delaware (655), sanitation of factories where fruits and vegetables are packed and preserved; Iowa (346), pure drugs; Minnesota (466), chemical preservatives in canning fruits and vegetables; Missouri (296), sidewalk display of meats; Nebraska (581), sale of diseased meat; North Carolina (349), artificially bleached flour; North Dakota (299), pure food and drugs; Arizona (56), Minnesota (21) and Washington (274), cold storage eggs; Minnesota (82), Montana (292), Oregon (260) and South Dakota (338), sale of poisons by others than registered pharmacists; Michigan (474), poisonous fly killers; South Dakota (719), wood alcohol; Michigan (506), adulterated soft drinks; New Jersey (619), handling of dairy products by persons having communicable diseases. The Sherley law forbidding false statements of the curative properties of medicines was held valid in United States *v.* American Laboratories (222 Fed. 104). The manufacture, sale and use of dangerous weapons has been regulated as indicated below; Hawaii (145), reports of sales required; Connecticut (1922), restricting sales; Delaware (686) and Hawaii (65), sales to minors; New Jersey (662), forbidding possession of hunting weapons by aliens; Indiana (111), shooting on or across highways; New York (1288), carrying dangerous weapons changed from a felony to a misde-

meanor, except where person is over 16 and has previously been convicted of crime. In Commonwealth *v.* Karvonen (106 N. E. 556 (Mass.)) a statute forbidding the carrying of red and black flags in parades was held valid. Minnesota (492) has regulated boxing contests; Nevada (23) and Montana (83) have restricted betting on horse races; and Connecticut (2024) has made football and baseball pools illegal. Illinois (254) and North Dakota (260) have legislated to prevent abuse of maternity hospitals. Connecticut (1974), New York (50) and New Jersey (553) have forbidden or restricted the use of hot-air or fire balloons. In Oregon (72) it is illegal to advertise to procure divorces. Illinois (496) has passed the Uniform Marriage Evasion Act. Kansas (302) forbids marriage of epileptic and insane persons where issue is possible.

Intoxicating Liquors and Habit-Forming Drugs.—Congress has passed an act providing for the registration of producers, dealers, importers and manufacturers of narcotic drugs (see also I, *American History*). The following states have passed laws to restrict their use: California (1066), Colorado (208), Connecticut (2175), Idaho (148), Illinois (500), Maine (103), Michigan (195), Minnesota (358), Missouri (279), Nebraska (405), Nevada (119), New Jersey (53), North Dakota (197), South Dakota (339), and Wyoming (128). The nature of the offense varies. In Hyde *v.* State (174 S. W. 1127 (Tenn.)), a statute forbidding physicians to dispense such drugs to patients whom they were not personally attending was upheld. Legislation relating to state-wide prohibition follows: Alaska (1), submitting question to a vote; Colorado, constitutional amendment (165) and statute (275); Idaho (83), statute and (395), constitutional amendment submitted to a vote; Oregon (150), statute; South Dakota (457), constitutional amendment submitted to a vote; Washington (2), initiative law (see also VI, *Amendments to State Constitutions*). North Carolina (115) has prohibited the manufacture and sale of malt. In Michigan (336) it is a misdemeanor to refer to any deceased president of the United States in a liquor advertisement. Minnesota (24) has passed a county-option law and North Carolina (140) a new regulatory act. Kansas (292) has made persistent violation of the liquor laws a felony. The following laws deserve mention: Alaska (97), California (341) and Montana (60), regulating sales to habitual drunkards, Indians and minors; Michigan (185), forbidding sales at lumber camps; South Dakota (452), forbidding sales to a person having taken the drink cure. A Kentucky statute making it a crime to keep intoxicating liquor elsewhere than in the owner's private residence was held unconstitutional in Commonwealth *v.* Smith (173 S. W. 340).

Treatment and Punishment of Prisoners.—Capital punishment has been abolished by North Dakota (76) (except where a convicted first degree murderer is again convicted of first degree murder), South Dakota (335) and Wyoming (84). In Malloy *v.* South Carolina (35 Sup. Ct. Repr. 507) the U. S. Supreme Court held a South Carolina statute substituting electrocution, with additional witnesses, for hanging, constitutional when applied to crimes previously committed. Several states have passed laws relating to the pay and labor of convicts (see XV, *Criminology and Penology*). The following acts have been passed relating to probation, parole, pardon and commutation: United States (1075), authorizing parole system for military prisoners; California (465), creating advisory pardon board; Hawaii (208) commutation, and (240, 284) amending parole law; Illinois (378), amending probation and (376) parole laws; Iowa (358), reduction of sentence to trusties; Montana (21), indeterminate sentence and parole; Nebraska (376), creating state parole officer; North Dakota (283), amending parole law (see also XV, *Criminology and Penology*). Iowa (238) has passed a new sterilization law, limited to inmates of insane hospitals and much milder than the Iowa law declared void in Davis *v.* Barry (216 Fed. 413; *A. Y. B.*, 1914, p. 263). Nebraska (554) has passed a similar law. The following miscel-

laneous laws deserve mention: Colorado (379), Connecticut (2075), felony to aid convicts to escape; Indiana (338), felony to escape from penal farm and Maine (95) from jail; California (218) and Minnesota (344), felony to supply convicts with narcotics and weapons; Nebraska (336), creating office of public defender.

Procedure, Trial, Evidence, Etc.—To avoid some of the difficulties encountered in the Thaw case, New York (933) has passed a statute permitting the court in cases where sanity is in issue to appoint three disinterested experts. In Illinois (440) handwriting may be proved by comparison in all courts. In Burdick *v.* United States (236 U. S. 79) a witness was held justified in refusing to answer certain questions before a Federal grand jury, after having declined a pardon from the President covering all offenses which he had or might have committed in connection with any matter to which he might testify. This case carries the privilege against self-incrimination to the extreme limit. In Michigan (155) judgments in criminal cases may not be reversed for error unless it affirmatively appears that the result is a miscarriage of justice. Oklahoma (696) has submitted to the voters a constitutional amendment, providing for juries of eight in non-capital cases and for verdicts by a three-fourth's vote in cases below felonies. In North Carolina (40) contempt trials involving personal conduct or fitness of a judge must take place before another judge. In Drew *v.* Thaw (235 U. S. 432), Thaw, who had escaped from an asylum and fled to New Hampshire, was held subject to extradition to answer an indictment for conspiracy to obstruct the due administration of the laws of New York, despite his argument that if insane he could not be guilty of conspiracy, and if sane he was justified in escaping. *Ex parte* McDonald (143 Pac. 947 (Mont.)) holds that a civil rather than a military tribunal is the proper one to try a man for resisting an officer in a district where martial law has been declared by reason of strike violence. This decision opposes the practice which was upheld in State *v.* Brown (71 W. Va. 519) and which gave rise to a storm of deserved protest. The most widely known case of the year was Frank *v.* Mangum (35 Sup. Ct. Repr. 582). Frank, convicted of murder, moved for a new trial alleging mob domination of the jury. The Georgia trial and appeal courts found this allegation untrue. A second motion for a new trial on the ground that the verdict was rendered in Frank's absence (though by consent of his counsel), was denied because waived by his failure to take timely advantage of it. He then petitioned the Federal Court for a writ of *habeas corpus*, setting forth the same allegations. The U. S. Supreme Court, Justices Hughes and Holmes dissenting, held the petition was properly refused. Frank was finally lynched after his sentence had been commuted to life imprisonment. (See also XV, *Criminology and Penology.*)

Miscellaneous.—Among many miscellaneous statutes the more interesting and important ones follow: Illinois (385) and Iowa (347), anti-tipping laws; Colorado (335), making "gift enterprise business" illegal and Nevada (7) repealing a similar act; Colorado (221), Iowa (100), Michigan (475), Montana (241) and Washington (691), absent-voter acts; Colorado (193), Illinois (385), Montana (36), Nebraska (582) and Washington (459), use of automobiles without owner's consent a crime; Minnesota (401), making slander a misdemeanor; California (761), repealing the act forbidding publication of cartoons; Illinois (384), dogs made subject to larceny; Idaho (40) and Nevada (17), prohibiting nepotism in the public service; Indiana (5), corrupt lobbying a felony; Louisiana (Spec. Sess. 44), prohibiting corporations and associations from contributing to the funds of political parties; Kansas (268), restricting use of conveyances at elections and (266) limiting campaign expenses; Iowa (330), requiring political advertising to indicate person responsible therefor; Nebraska (404), forbidding embalming with preparations containing arsenic or strychnine; Oklahoma (225), depriving person convicted of killing another of any benefit by inheritance, will or insurance.

X. PUBLIC RESOURCES AND PUBLIC WORKS

PUBLIC LANDS

MORRIS BIEN

Rocky Mountain National Park.—During the final session of the Sixty-third Congress several bills of interest were enacted in regard to the public lands. An act of more than usual interest to the country as a whole was that which established the Rocky Mountain National Park in Colorado, approved Jan. 26, 1915. This new park contains approximately 230,000 acres and is of special interest because it is so easily accessible, being within three or four miles of one line of railroad and within 15 miles of several others. It is also within about 40 miles of Denver. The park is placed under the executive control of the Secretary of the Interior, who is to make and publish reasonable rules and regulations for its care, protection, management and improvement.

Enlarged Homesteads.—During this session of Congress several acts were passed relative to the Enlarged Homestead Act. This law was originally approved on Feb. 19, 1909, and permits homestead entries of 320 acres on non-mineral lands which have been designated by the Secretary of the Interior as not susceptible of successful irrigation at a reasonable cost from any known source of water supply. The same provisions are made in regard to residence and cultivation as under the usual homestead law, but as the privilege of commutation does not apply, title may not be acquired before the end of the residence period by cash payment. Those who take up these enlarged homesteads are required to cultivate continuously for agricultural crops other than native grasses at least one-sixteenth of the area beginning with the second year of the entry and at least one-eighth of the area beginning with the third year of the entry. This Act as originally passed applied to only a few of the public-land states of the West but by various amendments it is now applicable to practically all of them. It is impracticable to state the actual net amount of public land which has been designated by the Secretary of the Interior as available for entry under this law, because the lists of lands so designated frequently contain a considerable percentage of lands not subject to entry, it being very difficult to obtain the precise status of all the lands in so large an area. On Aug. 31, 1915, however, the total area designated as available for entry under the law was nearly 240,000,000 acres, of which only a part is in fact subject to entry.

Protection of Water Supply for Towns.—Following the policy established a number of years ago, Congress passed several acts under which certain lands are set apart for the protection of the water supply of various cities and towns. During the last session such legislation was passed for the town of Nevadaville, Colo. (Feb. 27), and for the city of Grand Junction, Colo. (March 3). These acts in general designate specific tracts and provide that the city may purchase the lands at the rate of $1.25 per acre. The United States reserves all oil, coal and other mineral deposits that may be found in the lands granted and the necessary use of the lands for extracting the same. The city holds the land subject to the limitation that it will be used only for the purpose of protecting the water supply, and in case the lands shall cease to be so used they shall revert to the United States.

School Lands in Alaska.—By an Act of March 4, 1915, Congress set apart for the territory of Alaska two sections in each township when surveyed, namely sections 16 and 36 and

also section 33 in certain localities. These lands are to be reserved from sale or settlement for the purpose of supporting a territorial Agricultural College and School of Mines when established by the legislature of Alaska. Provision is also made that if any of said sections shall be of known mineral character at the date of the survey, they shall not be reserved, but the entire proceeds or income derived by the United States from said lands and the minerals are appropriated and set apart as separate and permanent funds to be expended for public schools for the Agricultural College and School of Mines as directed by the legislature of the territory. (See also VIII, *Alaska.*)

Sale of Villa Sites at Flathead Lake, Montana.—Flathead Lake, lying near the line of the Great Northern Railway in Montana, was formerly included within an Indian Reservation which has been restored to entry. Provision was made, however, for reserving a strip of land along its shores and on the islands within it for future disposition. These lands were subdivided into lots of convenient size of from two to five acres each and pursuant to law these lots were placed on sale on July 26, 1915. There were 21 groups of villa sites fronting on the lake and 889 lots were surveyed. The lake is a beautiful one, the surroundings very attractive and the climate corresponds to that of Pennsylvania or southern New York. The lots were disposed of at public sale to the highest bidder. No lot was to be sold for less than $10 per acre and payment of at least 25 per cent. of the price bid was required on the date of the sale. The remainder was payable in one to three payments according to the total amount bid for the lot. All the lots were sold for a total of $129,578.80.

Vacant Public Lands.—The following table shows approximately the areas of lands in the several states owned by the United States on July 1, 1915, which are not reserved. About one-fourth of the area is surveyed and available for settlement and entry:

	Area, acres
Alabama	47,940
Alaska	378,165,760
Arizona	36,810,327
Arkansas	278,155
California	20,635,923
Colorado	17,236,114
Florida	268,484
Idaho	16,212,273
Kansas	75,214
Louisiana	101,016
Michigan	76,030
Minnesota	943,831
Mississippi	36,882
Missouri	923
Montana	19,065,121
Nebraska	192,358
Nevada	55,417,746
New Mexico	27,788,357
North Dakota	493,667
Oklahoma	42,177
Oregon	15,442,178
South Dakota	2,934,609
Utah	33,363,837
Washington	1,144,605
Wisconsin	6,758
Wyoming	30,929,969
	657,710,254

Disposition of Public Lands.—The total area of public lands entered during the year ending June 30, 1915, was 16,861,214 acres, an increase of 338,362 acres as compared with the area entered during the preceding year. The total cash receipts from the sale of public lands during that year were $3,786,319.54; from the sale of Indian lands there were received in addition $1,556,630.97. These figures represent a decrease of $797,955.22 as compared with the receipts for the preceding year. The area of lands patented during the year was 13,025,428 acres, a decrease from the preceding year of 1,365,643 acres. Of the area patented 9,594,973 acres were taken under the Homestead Law, a decrease from the preceding year of 405,662 acres.

MINERAL RESOURCES

U. S. GEOLOGICAL SURVEY

GEORGE OTIS SMITH

Activities of the Year.—Never in its history has the extent and breadth of the work of the U. S. Geological Survey, both scientific and economic, been as great as during the year 1915. The personnel of the organization now numbers 900, besides a large number of temporary field workers during the open seasons. The aggregate of

accomplishment is large. Within the year 76,000 sq. miles of American territory were investigated geologically, 35,000 sq. miles were topographically surveyed, the volumes of rivers were measured at 1,350 gauging stations, and 36,000 sq. miles were classified as to their character and value as concerns coal, oil, gas, phosphates and other minerals, water power and other water resources, or designated as available for entry under the enlarged or 320-acre homestead law (see also *Public Lands, supra*). The major portion of this work was carried on by the Survey independently, but much of it was done in cooperation with other Federal bureaus, such as the Office of Indian Affairs, the General Land Office, the Reclamation Service, the Bureau of Mines, and also with many of the states, the U. S. Geological Survey being recognized as best equipped and possessed of the men best trained to carry the surveys forward promptly and economically. Thus 16 states met the Survey allotments of money with equal amounts, some with even more, the sums allotted aggregating hundreds of thousands of dollars for geologic and topographic surveys and for investigations of water resources (see also *State Geological Surveys, infra*). The vast fund of scientific and economic information acquired during the past third of a century is being heavily augmented each year through field, laboratory and office work, and the large and growing correspondence with the public ranges in character from discussions of matters of pure science to letters from manufacturers of articles of everyday use asking for the addresses of producers of raw minerals. Wider field investigation brings to light constantly accumulating information of the vastness of American mineral resources. The work of the past five or six years, for example, has increased the known rock phosphate reserves in the western states from an approximate 250 million tons to more than five billion tons and has increased the known coal reserve of the United States, exclusive of Alaska, by some 400 billion tons. In Alaska the Geological Survey has made its usual important contributions in geology and geography, continuing active explorations of little known regions and detailed investigations of known mineralized areas. Active work is in progress on the new $2,500,000 building at Washington in which the Survey will be housed, the contract having been let for its completion by Jan. 1, 1917.

Publications.—Since the statement in the YEAR BOOK for 1914 (p. 267), the Geological Survey has published 187 books and distributed 596,649 copies of its many hundreds of reports. These reports are sought by as diverse a class of citizens as is indicated by the correspondence of the office, the illiterate prospector, the large mine operator, the manufacturer who finishes the mine product, the college professor and the publicist.

The year's output in topographic maps published contributes materially to the total of more than 40 per cent. of the area of the United States shown on printed maps, besides considerable areas in Alaska. The present topographic surveys find expression in maps that have no rivals in the world (see also XXIII, *Cartography*). They are coming into more and more extensive use by all classes, great numbers, for instance, being sold to automobilists. The Survey distributed more than half a million of these maps during the year.

Geological Guidebooks.—Something of an innovation in reaching the people with Survey information found expression during the summer in the issuance of four transcontinental guidebooks, prepared expressly for the great traveling and reading public and sold by the Superintendent of Documents, Washington, at $1 a copy (see also XXIII, *Dynamical and Structural Geology*). The routes covered are the Northern Pacific, the Overland, the Santa Fe, and the Coast Line and Shasta. The volumes are wholly popular in style, although the traveler, as he turns their pages to keep pace with the plains, the mountains, the valleys and the towns which he sees through the car window, may read interesting features of their geologic as well as of their human history. Here and there he is carried back in time to a strange early world, when the Great Plains country was a huge island sea, or, later, a dense

semitropical swamp in which dwelt strange and monstrous beasts, or to a still later time when the region was inhabited by a higher order of animals—the saber-toothed tiger, the three-toed horse, and the mammoth—and then by the buffalo and the Indian, and finally by the white pioneer. To travel through our great West in company with a geologist gifted with the power of expression and explanation is an unusual privilege. The pages of the Geological Survey's guidebooks offer an even more unusual privilege, for the information they contain is the composite product of many minds and comprises a vast amount of geologic, botanical, and general information, presented in a simple and interesting way. The volumes are well illustrated photographically and contain topographic maps covering the entire routes so placed that the reader can unfold them one by one and keep each in view while he is reading the text relating to it, at the same time identifying the mountain peaks, streams, and mineral-producing areas from the car window. The special efforts of the year to reach the public with these more popular publications are intended as the beginning of a movement to popularize the results of scientific investigations.

STATE GEOLOGICAL SURVEYS

FRANK W. DEWOLF

Activities and Resources.—Thirty-three states maintained geological surveys during 1915, but there was general decrease in activity due to curtailment of funds. Adverse appropriations or vetoes caused especial embarrassment in Missouri, New York and Pennsylvania. State geologists with nominal functions were continued in Arkansas and New Mexico. Erasmus Haworth retired as state geologist in Kansas and was succeeded by W. H. Twenhofel and Freeman Ward succeeded E. C. Perisho as state geologist of South Dakota. The Association of American State Geologists met in Washington on April 21, and again on Dec. 27-31 for exchange of plans and for conference with coöperating Federal officials. The chief function of state surveys continues to be the collection and dissemination of information about mineral resources and geological structure; but many have charge also of road building, forestation, water-power development, soil improvement, and natural history study. In 1915 the state surveys expended approximately $430,000 and received the benefits of about $100,000 additional expenditure from funds of coöperating Federal and state departments. About 95 scientists were employed throughout the year by the states, besides 25 others furnished by coöperating bureaus. In addition a large force of topographers and soil experts were engaged in making coöperative maps.

Topographic Maps.—Topographic maps were prepared in twelve or more states under coöperation between the state and the Federal Survey (see also *U. S. Geological Survey, supra*). Topographic maps are of broad public value in building roads and draining swamps, besides serving as a basis for detailed surveys of buried mineral wealth. Of especial interest was the survey of more than 2,600 sq. miles in Ohio, which practically completed work for the entire state. A vigorous programme was adopted for a rapid survey of Michigan, and lines of control were extended over 200 miles.

Economic Geology.—The expenditure of state funds for geological surveys continues to be directed chiefly to the discovery and development of materials of commercial value. As a foundation for this result, however, and to a considerable extent for purely scientific purposes alone, many theoretical and educational problems are undertaken. Practically all state surveys published mineral statistics for 1914 and were collecting those for 1915 at the end of the year. Most of this work is directed by the U. S. Geological Survey, and constitutes the most reliable index to activities in mining and metallurgy. Other economic investigations of the year are summarized in the following paragraphs.

Stones and Minerals for Building Purposes and the Arts.—Examination and testing of brick clays, stones for building, and especially of stone,

sand and gravel for making concrete, were actively pursued in nearly all states. In addition, several mountain states investigated rare minerals used in making lighting filaments and mantles, together with others used in special arts and industries. Field work on limestones and marls of southern Georgia and of Mississippi was finished, and a report on similar materials in Michigan was prepared for publication. A report on crystalline rocks of Kansas was published. A bulletin on the granites of Oklahoma was in press. Investigation of sand and gravel in Missouri was completed. A monograph on gypsum deposits of Iowa was in preparation. The Georgia Survey published a report on feldspar and mica, and made investigations of fuller's earth and bauxite of the southern area. The Nebraska Survey made a study of potash and other alkaline earths. In New Jersey rare minerals and potash feldspars, and in Wyoming potash and sulphur deposits were examined. Investigations were made of white phosphates of Tennessee and of important phosphate deposits of Johnson County.

Clay materials suitable for china, pottery, refractories, and the commoner building and paving purposes were widely examined and tested. A bulletin on clays of Colorado was published. Special studies were undertaken of the common clays of Illinois, New Jersey, and Nebraska, and of the light-burning clays of Iowa.

Coal and Peat.—An extensive chemical and calorific examination of Alabama coals was in progress. A detailed survey of an important coal area surrounding Sparta, Ill., was finished, and a report on coal resources of Franklin, Williamson, Saline, and Gallatin counties was prepared for publication. A bulletin on subsidence due to coal mining in Illinois was prepared in coöperation with the University of Illinois and the U. S. Bureau of Mines. Reports on four coal areas embracing 1,000 sq. miles in Kentucky were published; others were in preparation for coals of the North Fork of Kentucky River, for Shawneetown quadrangle, which is the key to western-Kentucky Pennsylvanian stratigraphy, and for Letcher County. An important investigation on the coal-mining methods in Kentucky was under way. The coal fields of Kittitas County, Washington, were described. West Virginia coals were treated in seven county reports covering over 3,100 sq. miles. Three additional county reports for 780 miles awaited printing, and ten other counties including more than 2,300 sq. miles were surveyed. A report on peat deposits of Wisconsin was issued.

Oil and Gas.—A notable volume and an atlas describing the petroleum industry of California were published early in 1915. The State Mining Bureau was given jurisdiction over oil and gas operations, with a view to minimizing losses due to encroachment of water. The scattered fields of Illinois were included in a reconnaissance survey; two quadrangles in Lawrence County were surveyed in detail in coöperation with the U. S. Geological Survey; and reports for three large areas elsewhere, with recommendations for drilling, were published. Gas or oil was found in three of the tracts recommended. Oil development in Scott County, Tenn., was described in a survey report. In Oklahoma, a general report on oil and gas conditions was prepared, and another on the Cushing field was published. Many of the West Virginia county reports enumerated under "Areal Geology" (*infra*) covered important oil and gas fields and prospective areas. Wyoming bulletins were issued for Little Buffalo, Grass Creek, Greybull, and Basin oil and gas districts.

Iron, Lead, and Zinc.—A report on gray (magnetic) iron ore of Alabama was in press, and survey was continued of magnetic ores in Michigan and other ores west of the Marquette range and north of the Iron River district. Similar surveys were continued in northern Wisconsin and reports were published on iron-bearing lands in a part of the area. In Minnesota a detailed study of Cuyuna range was made in coöperation with the U. S. Geological Survey. Pyrite deposits of Georgia were examined, and small iron bodies near Waukon, Iowa, were investigated. Geology of the Joplin, Mo., zinc district was investigated in connection with special

large maps, and work was in progress also on Washington County lead and barite deposits.

Detailed Areal Surveys.—Surveys of geological formations underlying large areas were made in the various states. Most of these included determinations of structure, and the vertical sequence of formations. Such work is usually based on quadrangle maps or county maps with or without topographic expression. The geologic atlas of the United States will eventually be a compilation of such areal surveys conducted by official bureaus. During 1915, surveys were made in the marble belt of Talladega County, Alabama. In Illinois two quadrangles in the southeastern oil fields and one in the southern coal field of Randolph County were surveyed. In Iowa, eight county reports and maps were in progress. Three county geological maps were published by the Maryland Survey. In Nebraska, the Falls City and Howe quadrangle surveys were completed. New York work was confined to the Adirondack Mountains. Field work was completed for a survey of two quadrangles in North Dakota, in cooperation with the U. S. Geological Survey. Surveys were made in Tennessee of Rutherford County and of the Cretaceous area of McNairy and Hardin counties. West Virginia continued to make county surveys at a rapid rate, having published complete areal, economic, and soil maps and reports for 3,160 sq. miles, comprising Logan, Mingo, Boone, Wyoming, McDowell, Lewis and Gilmer counties. Reports were prepared for Raleigh and parts of Mercer and Summers counties (787 miles), and surveys were made of Braxton, Clay, Upshur, Barbour, Jefferson, Berkeley and Morgan counties (2,313 sq. miles). In northwest Wisconsin areal surveys and land classification were continued. In Missouri, a survey of Vernon County was begun.

Stratigraphic and Paleontologic Geology.—Investigations closely allied to those just mentioned, but with special emphasis on correlation and vertical sequence of stratigraphic units as determined or supported by study of fossils, may be described as follows. The survey of the pre-Cambrian of northern Michigan was completed and a preliminary paper on this area and on northern Wisconsin was published. Some work was done on the Keweenawan at Silver Mountain on the South Trap range. Investigations were made of terranes of Kansas and of the Cambrian of Coosa Valley, Alabama. Work on the Devonian of Iowa was continued, and a report on the Devonian of Michigan was prepared. Studies of the Mississippian in Illinois, Iowa, Kentucky, and Missouri, in coöperation with the U. S. Geological Survey, made notable progress, especially in the Ilinois-Kentucky areas. In Missouri systematic collections from the Mississippian were made from the northeast to the southwest corners of the state. Oklahoma reports were issued on the Neva limestone and on the Wapanucka limestone, as well as on the geology of the Mississippi area. In Ohio field work on the Mississippian of southern counties was finished. The Pennsylvanian stratigraphy of Missouri and its correlations with neighboring states was a publication notable for its success in simplifying and condensing stratigraphic units and eliminating conflicting formation names. The Permian formations of Kansas were studied in detail. Field work on the Eocene and early Oligocene of Mississippi was completed in coöperation with the U. S. Geological Survey. The La Fayette formation of Alabama was investigated under similar coöperation. The Iowan drift problem was reconsidered and the Iowan confirmed, as the result of a field conference in coöperation with former workers on the problem. The driftless area was also studied. General paleontological investigations were carried through the northern tier of counties in Nebraska and excellent fossil vertebrates and fossil woods were collected.

Miscellaneous Maps and Investigations.—California reports on mines and resources for 25 counties were published, and for 14 others were prepared; field work was under way in seven counties. Reconnaissance surveys of economic character were made in the Cascade area and in Curry County, Oregon. A bibliography of

Oklahoma geology was issued. An excellent new geologic map of Tennessee was published and a report on stratigraphy and historical geology prepared. A topographic map of Wyoming was in preparation. Geographical studies were continued in Illinois. A popular bulletin and map on geology, geography, resources, and soils of Mississippi was prepared. A volume on Fox Valley, Wisconsin, was published, and studies of climate, geography, and history of the state were under way. The history of the La Salle anticline in Illinois was under investigation. The fresh-water life of Coosa River Basin, Alabama, was studied; and several varieties of birds, molluscs, orthoptera, and rodents were studied in Iowa. In Maryland the large map of Baltimore made progress.

Surface and Underground Waters.—Studies of water available for domestic or industrial purposes are growing in importance. Many analyses were made in Alabama, and a delayed report on water power was in press. Underground-water investigation in Connecticut was continued in coöperation with the U. S. Geological Survey. A coöperative drainage survey of Pecatonica Valley, Illinois, was finished, and many well records and samples were collected. Field work and analyses of underground waters of Mississippi were completed in coöperation with the U. S. Geological Survey. Similar work in New Jersey and in Missouri was finished for final reports. A sea-shore reclamation project in New Jersey was supervised. Stream gauging in Iowa, Illinois, and Michigan was continued. North Dakota surface waters and springs were examined and analyzed. Proceedings of the annual drainage convention of North Carolina were published. A report on Ohio industrial waters was nearly finished. Waters of west central Oklahoma were studied in detail. Tennessee hydro-electric systems were described in a preliminary paper.

Soil, Forest, and Highway Investigations.—Many state surveys, alone or in coöperation with other bureaus, investigated soils, forests, and highways. Soils of four counties in Alabama were surveyed in coöperation with the U. S. Department of Agriculture. Maryland maps of four counties were issued. New Jersey soil surveys covered 350 sq. miles. A Kentucky report for Franklin County was published. Study of Michigan wood lots was continued. The flora of Mississippi has been under investigation two seasons. North Carolina gave especial attention to forest protection and published reports on forest fires and protective associations made possible by the Federal Weeks law. A bulletin on the loblolly pine was issued. In Tennessee, papers on erosion of soils were published, and a survey of Jackson County was issued by the Federal Survey, while similar work in Shelby County was begun. A paper on the care of the forest was distributed. Mississippi soil surveys in coöperation with the U. S. Bureau of Soils were completed for Chickasaw, Coahoma and Jefferson Davis counties and extended into Lee County. Soil surveys of several Wisconsin counties were finished; and in Minnesota the surface soil and agricultural conditions of northwestern counties were described and mapped. Road materials and road statistics were studied in Georgia and New Jersey. In North Carolina good roads meetings were reported, and construction of two state highways was under supervision of the state geologist.

RECLAMATION

Fred G. Harden

The Reclamation Service.—The sundry Civil Appropriation Act approved March 3, 1915, limits the total amount that can be expended from the reclamation fund during the fiscal year ending June 30, 1916, to $13,530,000, and fixes the maximum amounts, subject to 10 per cent. increases by interchanges from other projects, that may be expended upon the different projects. The amounts for the several projects are given in the table below. The Act also provides that no new work shall be undertaken or expenditures made for lands for which the construction

charges have been fixed by public notice, if such work will increase the charges above those fixed, unless the water-right applicants and entrymen agree to repay the increased costs.

The Secretary of the Interior on Dec. 10, 1914, ordered the consolidation of the positions of director and chief engineer of the Reclamation Service and created the position of chief of construction. These two officials together with the chief counsel, the comptroller, and the supervisor of irrigation were constituted a commission for the purpose of considering all questions of administrative policy and management, and recommending action thereon to the Secretary. Later this commission was reduced to three members by omitting the chief of construction and the supervisor of irrigation.

On Jan. 20, the Secretary of the Interior ordered a revaluation of all projects or units of projects for which construction charges had been announced by public notice. A board of three was appointed for each project, one member being an engineer or project manager appointed by the Reclamation Service and one being selected by the waterusers of the project. The third member for each Reclamation Service division was selected by the Secretary of the Interior from a list of men nominated by all the other members appointed in the division. The third member in all cases was neither a wateruser, a person interested in a project, nor a present or former employee of the Reclamation Service, and the same person served on all the boards in the same division. The 24 boards so appointed were charged to ascertain the proper construction costs to be collected on the projects or units where the charges had been fixed by public notice, to fix charges for the projects and units which had reached a degree of completion that made it practicable or advisable to do so, and to report to the Secretary of the Interior before July 1. The reports when received were referred to a central board of review composed of Elwood Mead, until recently chairman of the State Rivers and Water Supply Commission of Victoria, Australia, and formerly chief of irrigation and drainage investigations of the U. S. Department of Agriculture; Brig.-Gen. W. L. Marshall, consulting engineer to the Secretary of the Interior; and I. D. O'Donnell, supervisor of irrigation of the Reclamation Service.

The allotment to projects for the fiscal year ending June 30, 1915, was $11,742,041.78, bringing the total allotments up to $121,951,997.78. The total net investment in primary projects on June 30, 1915, was $94,613,554.42, being an increase of $11,694,752.59 during the year. The total expenditure planned for the fiscal year 1916 is $10,473,000. The total charges collected during the fiscal year 1915 were: construction, $471,137.31; operation and maintenance, $171,407.23; miscellaneous, $1,105,390.18; bringing the totals up to $3,575,468.90 for construction, $2,067,255.07 for operation and maintenance, and $6,135,410.09 from miscellaneous charges, $2,707,529.08 of the latter amount being from temporary water rentals.

The Reclamation Service was prepared to furnish water to 1,240,875 acres during the crop season of 1914, but of this area only 761,271 acres (62.3 per cent.) were irrigated and 703,424 acres (56.7 per cent.) were cropped. The area irrigated was included in 17,619 farms, the average acreage irrigated per farm being 43, an increase of one acre over 1913. The total value of the crops raised was $16,475,517. The acreage of different crops and the average crop values per acre are shown in the following table:

Crop	Acreage	Average Value Per Acre
Cereals	183,756	$16.00
Other grains and seed	34,101	17.00
Alfalfa	329,676	19.00
Hay and forage, including alfalfa	444,300	16.50
Fruits and nuts	19,826	96.00
Vegetables and truck	33,450	59.00
Sugar beets	12,753	57.00
Cotton	15,072	55.00
Other crops	2,021	.....
All crops	703,425	23.50

On Jan. 7 the Elephant Butte dam on the Rio Grande project was closed; on April 15 the Roosevelt reservoir

of the Salt River project was full for the first time; and on Oct. 4 the Arrowrock dam on the Boise project was completed (see also XXI, *Civil Engineering*).

The table on the next page gives by projects the amounts appropriated by Congress for the fiscal year 1916; the amounts that it is planned to expend during the fiscal year 1916; the total allotments, the total net investments, and the total construction and the total operation and maintenance charges collected up to June 30, 1915; the acreage the Service was prepared to furnish water to, the acreage irrigated, the acreage cropped, and the value per acre of the crops grown in 1914.

U. S. Department of Agriculture.—The appropriation for the Department of Agriculture for the year ending June 30, 1915 includes the following items for irrigation and drainage: $70,000 for investigations in connection with western irrigated agriculture; $40,000 to encourage and aid in the agricultural development of government irrigation projects; $106,400 for investigations of farm irrigation, laws and institutions relating to irrigation, and power and appliances for irrigation; and $96,280 to investigate the drainage of swamp and other wet lands.

Private Irrigation.—Difficulty in floating bonds and obtaining settlers has continued to handicap irrigation construction by Carey-Act companies, irrigation districts and other companies and individuals. Such activity as has existed has been largely in California, Washington and Oregon. The year 1915 has been one of more than usual rainfall throughout most of the semi-arid region and as a result the renewed interest in irrigation which has been noticeable in this region during the last few years was somewhat checked.

The question of financing irrigation and drainage enterprises received considerable attention at the meeting of the Investment Bankers' Association at Denver, and committees were appointed to make recommendations and suggest plans. The subject was also discussed at considerable length at the International Irrigation Congress held at San Francisco, Stockton and Sacramento, Cal., Sept. 13-30, and resolutions were passed asking Congress to permit United States funds to be used in completing reclamation projects other than those of the Reclamation Service. It was recommended also that Federal legislation be enacted providing for the adjudication of rights on interstate streams on the basis of private appropriation and beneficial use.

Data collected by the U. S. Department of Agriculture and the state engineer of Nebraska during 1914 show that in that state only 53 per cent. of the canals and 60 per cent. of the mileage built were in operation, and that only 50 per cent. of the lands under ditch were irrigated in 1914.

Irrigation Legislation.—All the legislatures of the arid and semi-arid states were in session during the year and practically all of them passed irrigation legislation of more or less importance. Arizona, Oregon and Montana made quite complete revisions of their irrigation-district laws, while Nebraska, Texas and Colorado made lesser changes in their district laws. Noticeable features of the changes were: extending the time of maturing the first bonds due from 10 years to 20 years and the maturity of the last bonds due from 20 years to 30 or 40 years; authorizing districts to contract with the United States for construction, water supplies, etc., and to pay for the same with bonds; and permitting districts to contract with the United States to guarantee bonds. In Texas the finances of all improvement districts in counties having a population of more than 100,000 were placed in the hands of the county auditor. The Board of Irrigation, Survey, Experiment and Demonstration created in Kansas in 1913 was abolished and its powers and duties given to an irrigation commissioner to be appointed by the governor for two years. This official is charged with testing the conservation of rainfall and storing the surplus surface waters west of the 99th meridian and is authorized to build dams, reservoirs, canals, etc., for that purpose. The county commissioners of counties with less than 15,000 population

State	Project	Total Allotments to June 30, 1915	Appropriation, 1916	Amount to be Expended, 1916	Construction Charges Collected to June 30, 1915	Operation and Maintenance Charges Collected to June 30, 1915	Net Investments to June 30, 1915	Acreage for Which Service Could Furnish Water, 1914	Acreage Irrigated, 1914	Acreage Cropped, 1914	Crop Value Per Acre, 1914
Arizona	Salt River	$13,393,000.00	$590,000	$537,000	$100,000.00	.....	$10,431,275.09	187,112	173,030	169,719	$23.80
Arizona—California	Yuma	8,663,000.00	825,000	659,600	215,901.69	$44,345.55	7,678,853.92	60,000	25,207	22,568	31.43
California	Orland	955,000.00	87,000	70,200	.....	.....	787,961.02	14,300	7,354	6,540	26.99
Colorado	Grand Valley	2,665,300.00	702,000	561,300	.....	.....	2,359,251.08	.....	.....	.....	.....
	Uncompahgre	6,319,000.00	469,000	375,400	.....	.....	5,701,714.18	52,338	33,873	33,091	26.30
Idaho	Boise	12,405,700.00	1,650,000	1,040,000	.....	.....	10,905,760.89	207,000	83,590	74,932	17.80
	Minidoka	6,652,500.00	410,000	328,300	398,456.51	259,209.60	4,986,211.82	117,090	81,518	72,650	16.79
Kansas	Garden City	396,000.00	2,000	1,600	142.50	104.50	376,185.27	.....	.....	.....	.....
Montana	Huntley	1,787,000.00	150,000	120,000	255,681.82	95,756.22	1,162,854.63	28,808	17,068	17,068	26.63
	Milk River	4,569,000.00	1,100,000	422,300	.....	.....	2,374,832.44	13,440	2,201	2,163	16.00
	St. Mary Storage			473,900	.....	.....	1,507,381.24	.....	.....	.....	.....
	Sun River	2,751,000.00	1,100,000	720,000	110,166.95	36,851.16	2,248,381.34	16,346	6,613	6,561	16.25
Montana—North Dakota	Lower Yellowstone	3,428,780.10	70,000	47,000	34,948.07	36,144.49	3,203,581.06	36,250	5,743	5,621	17.20
Nebraska—Wyoming	North Platte	7,532,000.00	1,140,000	916,200	237,121.61	274,142.49	6,574,137.65	91,504	60,532	59,536	14.95
Nevada	Truckee-Carson	6,470,000.00	236,000	190,000	264,335.17	157,653.14	5,774,435.22	52,039	39,516	39,285	11.23
New Mexico	Carlsbad	1,179,000.00	128,000	102,000	119,332.11	124,334.47	882,899.37	20,261	12,690	10,731	22.15
	Hondo	401,000.00	6,000	4,000	.....	.....	367,257 11	1,224	1,224	1,172	18.30
New Mexico—Texas	Rio Grande	5,727,000.00	1,265,000	1,011,400	.....	.....	4,679,501.75	40,000	28,442	27,302	42.51
North Dakota	North Dakota Pumping	1,229,000.00	25,000	20,000	7,847.52	13,307.15	954.860.59	12,239	1,056	1,045	34.87
Oklahoma	Lawton	57,000.00	50,000	40,000	.....	.....	8,987.19	.....	.....	.....	.....
Oregon	Umatilla	2,304,000.00	366,000	294,800	196,112.26	65,096.61	1,786,918.19	17,000	5,102	3,013	29.41
Oregon-California	Klamath	2,880,000.00	317,000	164,900	277,705.88	110,624.25	2,386,946.99	38,000	24,440	24,440	14.22
South Dakota	Belle Fourche	3,712,773.69	144,000	144,000	133,622.50	106,837.06	3,312,883.84	68,852	37,454	36,709	12.56
Utah	Strawberry Valley	3,188,000.00	393,000	393,000	.....	.....	2,589,511.22	.....	.....	.....	.....
Washington	Okanogan	905,000.00	51,000	51,000	24,549.33	35,492.62	716,072.01	10,099	7,740	3,180	32.88
	Yakima—Storage			52,000	100,000.00	.....	1,728,447.26	.....	.....	.....	.....
	Yakima-Sunnyside	9,399,205.43	1,250,000	559,800	633,530.91	477,296.88	2,114,747.78	81,807	64,052	49,273	58.02
	Yakima—Tieton			278,000	225,484.81	124,939.68	2,923,237.26	34,000	20,600	15,920	29.60
Wyoming	Shoshone	4,787,000.00	478,000	419,300	240,529.26	105,119.20	4,088,467.01	41,166	22,226	20,905	15.01
Jackson Lake Enlargement	.....	.....	476,000	475,700	.....	.....	54,791.48[1]	.....	.....	.....	.....
Secondary projects	.....	1,117,416.48	50,000	38,625	.....	.....	895,361.01[1]	.....	.....	.....	.....
Preliminary investigations	.....	80,488.73			.....	.....	80,488.73[1]	.....	.....	.....	.....
Unallotted and special	.....	.....	.....	11,325	.....	.....	.....	.....	.....	.....	.....
General accounts	.....	6,997,833.35	.....	.....	.....	.....	66,098.33[1]	.....	.....	.....	.....
Total	.....	$121,951,997.78	$13,530,000	$10,473,350	$3,575,468.90	$2,067,255.07	$94,613,554.42	1,240,875	761,271	703,424	23.50

[1] Not included in total.

also may spend up to $2,500 for purchasing lands and sinking test wells to determine the water supply for irrigation purposes. An Irrigation and Water Rights Commission, appointed by the governor, to consist of the state engineer, the attorney-general, the president of the Agriculture College, and two other members, one a practical irrigator and one a person who has dealt with water-right and water-resources development, was created in Utah for the purpose of investigating the existing condition regarding water rights and irrigation in the state, of studying the practicability of the irrigation laws of other states, and of recommending changes in the water laws of the state. The legislature of Idaho abolished the office of water commissioner and lodged the duties and powers in the state engineer. The act also provided that the state engineer should divide the state into water districts (it has been divided into 66 districts) and that the water users in each division should elect annually a water master. The expense for water master and assistants is met by assessment upon the lands in the district according to the amount of water used. Five years of non-use was made to constitute abandonment. The office of state engineer in Oregon was changed from an elective to an appointive office. On Nov. 3, 1914, an amendment was adopted to the constitution of California permitting irrigation districts to acquire the stock of foreign corporations. It made possible the acquisition by the Imperial Irrigation District of the property of the California Development Co. in the Imperial Valley and Mexico. The district as organized includes 523,600 acres, of which 315,000 acres are under irrigation, and it is estimated that the system can be extended to embrace 600,000 or 700,000 acres in California and 500,000 acres in Lower California. The legislature of New Jersey empowered counties, townships and municipalities to construct and operate irrigation systems, to furnish water for irrigation, and to issue bonds, notes, or other evidences of indebtedness, either temporary or permanent, to pay for such systems.

Drainage.—During the year a considerable amount of drainage, conservancy and flood-protection work was done in the states of Minnesota, Arkansas, Ohio, Missouri, Iowa, Texas, North Carolina, South Carolina, Mississippi, Tennessee, Florida and California. One of the largest contracts let was that of the Everglades Drainage District of Florida, providing for the removal of 20,000,000 cu. yd. of earth in the construction of a canal 24 miles long, from 120 to 160 ft. wide on the bottom, and having a maximum depth of 28 ft. On July 27 a board of engineers reported a plan of flood protection for the city of Los Angeles which it was estimated would cost $16,000,000. The state drainage commission of Minnesota has constructed or has under construction 1,157 miles of ditch, necessitating the removal of 17,000,000 cu. yd. of earth and benefiting 1,400,000 acres at a cost of $1,600,000. Approximately 8,940 miles of county and judicial ditches have been constructed or are contracted for in the state. These will require the removal of 77,000,000 cu. yd. of earth at an estimated cost of $12,500,000 and will benefit 6,000,000 acres.

Drainage Legislation and Litigation.—Drainage-district laws were passed in Oregon, Alabama and Delaware; the existing district laws in California, Montana and Missouri were revised; and one or more amendments to those of Wyoming, Texas, Washington and Colorado were passed. Diking districts in Washington were empowered to widen, straighten and improve watercourses whether navigable or not, and to construct dams, canals, etc., to provide drainage for the reclaimed lands. The legislature of Nebraska authorized drainage and irrigation districts to contract with the United States to guarantee the bonds or to extend credit. Several drainage districts were created by the legislature of Arkansas, and in California the acts of 1911 and 1913 providing for the approval of the plans for the reclamation of the lands along the Sacramento River system were amended to provide for the organization, the powers, duties, etc., of the reclamation board and to create a revolving fund. The legislature of Indi-

ana passed a general flood-protection law for cities of other than the first class and special acts for the cities of Indianapolis, Peru and Fort Wayne, besides passing acts providing for the organization of various kinds of districts for conservancy and flood protection. A Department of Conservation and Development consisting of eight members was created in New Jersey. This board elects a director of conservation and development who is to exercise the powers formerly vested in the state water-supply commission, the state geological survey, the board of forest-reservation commissioners, the state museum, the Washington Crossing commission, and the Fort Nonsense Park commission. The Ohio conservancy law passed in 1914 (*A. Y. B.*, 1914, p. 278) was upheld by the state supreme court; following this decision the Miami conservancy district including lands in nine counties was organized and several other districts started.

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HIGHWAYS

Andrew P. Anderson

Highway Engineering and Construction.—In the field of highway engineering the year 1915 has been chiefly notable for the large mileage of roads improved and the further progress made towards standardizing existing methods of construction, especially those designed to withstand heavy mixed traffic. In road construction the general depression in many allied fields, especially railroad construction, has resulted in a continuation of keen competition for contracts. Towards the close of the year complaints of a shortage of labor came from numerous localities. Wages were in general but slightly above those of 1914, until near the close of the year, when a marked increase was noted.

Much attention has been devoted toward the construction of so-called permanent roads. The mileage of concrete roads, both plain and with a thin bituminous top, has largely increased during the year. Efforts to decrease the cost of brick roads has led to numerous experiments, the most promising of which have, in general, taken the form of either reducing the thickness of the concrete foundation or of omitting the sand cushion and bedding the brick blocks in the newly placed concrete before it sets so as to form a monolithic construction. The year has two notable examples of roads constructed largely for their scenic value, the Columbia Highway in Oregon, which is nearly completed, and the Storm King Road along the Hudson in New York, for which the contract was let in July.

Legislation.—The legislatures of 43 states occupied a considerable portion of their time during the year with the general subject of road legislation. In general the legislation was of a progressive nature and resulted in a strengthening of the existing laws. Ohio performed the commendable task of codifying its entire mass of existing road legislation. Massachusetts appointed a committee to study the question of properly coördinating and codifying the existing road legislation for report at the next session. Only one state, Wisconsin, made any considerable reduction in the annual appropriation for state or state-aid road construction; the annual sum appropriated for the next two years was fixed at $870,000 as compared with $1,230,000 during the previous two years.

STATE HIGHWAY EXPENDITURES, 1914

	Expenditures					State Money Available for Road Work, 1915
	Local Funds Expended by Counties, Townships, and Districts	Joint Funds (State and Local Units)		Road Work Done Solely at Expense of State	Total of State Joint and Local Funds	
		Local Unit's Share	State's Share			
Alabama	$2,795,000[1]	$160,693	$170,232[2]	.....	$3,125,925	$144,000
Arizona[3]	603,608	.....	.....	$406,125	1,009,733	396,883
Arkansas[5]	2,332,368	.....	115,000	.....	2,447,368	25,000
California[6]	9,495,281	.....	.....	5,175,333	14,670,614	7,000,000
Colorado	1,621,950	678,225	301,274	.....	2,601,449	85,000
Connecticut[7]	1,400,000[1]	265,125	1,307,381	2,124,276	5,096,782	1,000,000
Delaware	360,411	30,000	31,000	.....	421,411	30,000
Florida[8]	3,450,000[1]	.....	.....	.....	3,450,000	.....
Georgia	2,500,000[1]	.....	.....	.....	2,500,000	.....
Idaho	1,265,000	43,466	49,812	.....	1,358,278	200,000
Illinois	7,102,977	446,702	387,989	.....	7,937,668	2,100,000
Indiana	13,258,761	.....	.....	.....	13,258,761	.....
Iowa	11,363,000	.....	74,000	.....	11,437,000	100,000
Kansas	5,427,424	.....	9,080	.....	5,436,504	11,000
Kentucky[9]	1,700,000	.....	18,000	.....	1,718,000	600,000
Louisiana	4,000,000	300,320	161,186	.....	4,461,506	145,000
Maine	1,863,000	375,731	467,149	831,716	3,537,596	1,000,000
Maryland	2,000,000	356,845	356,845	4,283,768	6,997,458	4,572,000
Massachusetts	3,318,742	241,838	242,560	2,217,469	6,020,609	2,437,000
Michigan	6,715,000	2,082,612	657,264	61,348	9,516,224	1,700,000
Minnesota	4,272,244	2,643,621	1,309,956	.....	8,225,821	1,770,741
Mississippi	2,850,000	.....	.....	.....	2,850,000	.....
Missouri[10]	8,000,000[1]	.....	277,253	.....	8,277,253	350,000
Montana	2,553,773	.....	13,516	.....	2,567,289	25,000
Nebraska[11]	3,347,062	.....	.....	.....	3,347,062	100,000
Nevada	240,000	.....	.....	.....	240,000	.....
New Hampshire	1,250,000	301,288	491,520	9,365	2,052,173	400,000
New Jersey	3,000,000	2,235,976	1,306,596	.....	6,542,572	1,360,000
New Mexico	371,196	40,281	[15],732	.....	527,209	175,000
New York	7,741,142	6,655,072	8,544,126	6,950,133	29,890,473	15,000,000
North Carolina	3,930,000	.....	5,000	.....	3,935,000	10,000
North Dakota	2,365,000	.....	.....	.....	2,365,000	.....
Ohio	8,500,000[1]	906,543	1,855,338	.....	11,261,882	3,300,000
Oklahoma[12]	3,375,000	.....	.....	.....	3,375,000	15,000
Oregon	5,155,657	1,718,000	10,697	178,278	7,062,632	233,000
Pennsylvania	5,500,091	657,437	1,976,768	2,290,284	10,424,580	5,000,000
Rhode Island	385,000	.....	.....	199,598	584,598	180,000
South Carolina	1,000,000[1]	.....	.....	.....	1,000,000	.....
South Dakota	1,421,501	.....	.....	.....	1,421,501	.....
Tennessee[13]	2,500,000[1]	.....	.....	.....	2,500,000	.....
Texas	8,750,000[1]	.....	.....	.....	8,750,000	.....
Utah[7]	750,000[1]	249,204	157,732	.....	1,156,936	100,000
Vermont	723,011	300,000	458,456	.....	1,481,467	400,000
Virginia	2,148,436	1,243,432	523,578	.....	3,915,446	520,000
Washington[14]	4,000,000[1]	.....	1,343,431	877,700	6,221,131	3,167,583
West Virginia[12]	2,388,000	144,000	.....	.....	2,532,000	11,800
Wisconsin	4,519,000	3,117,329	1,482,379	.....	9,118,708	1,215,000
Wyoming	426,448	.....	.....	.....	426,448	5,000
Total	174,035,083	25,193,740	24,220,850	25,605,393	249,055,067	54,884,007

[1] Data approximate. [2] Includes $2,000 paid to county for bridges, but not reported as expended. [3] Data for fiscal year. [5] No money aid for construction. [6] Data includes the state expenditure of $150,920 on 519 miles of state mountain roads, divided as follows: construction, $54,866; maintenance, $89,713; engineering, $2,894; and administration, $3,446. [7] Data from state comptroller's report. [8] State highway department provided for beginning Oct. 1, 1915. [9] State aid in road construction beginning 1915. [10] Data from the state auditor's report. [11] State aid in bridge construction only. [12] Educational and advisory. [13] State highway department provided for by act of legislature, 1915. [14] Figures given are one-half of the expenditures for the period Apr. 1, 1913, to Apr. 1, 1915.

The states of North Carolina, Tennessee, and Florida enacted legislation providing for state highway departments. North Carolina had assisted the good roads movement in a small way through the Economic and Geological Survey since 1901. The new highway department is as yet largely limited to giving engineering assistance and advice to townships and counties. The annual appropriation is $10,000. Tennessee provided for a state highway department with apparently large advisory and

STATE HIGHWAY MILEAGE, JAN. 1, 1915

	Total All Surfaced Roads in State (Approximate)	Total All Public Roads in State	Percentage of Surfaced Roads in State	State and State-aid Roads Built in 1914	Total All State and State-aid Roads Built to Jan. 1, 1915	Roads Maintained with State aid, 1914
Alabama	5,491	49,639	11.1	113[1]	399	.....
Arizona	400	5,987[2]	6.7	10[3]	247	122
Arkansas	1,085	36,445	3.0	[4]	.....	.....
California	9,388	48,069	19.5	406	1,124	919
Colorado	655	30,571	2.1	248[5]	655[6]	.....
Connecticut	3,300	12,582	26.2	199[7]	1,282	1,125
Delaware	241	3,000	8.0	10	144	.....
Florida	2,625	17,954	14.6	[8]	.....	.....
Georgia	12,500	83,986	14.9	[9]	.....	.....
Idaho	611	18,406	3.3	70	100	.....
Illinois	9,000	94,141	9.6	99	284	.....
Indiana	26,831	63,370	42.3	[10]	.....	.....
Iowa	2,505	104,027	2.4	[11]	.....	.....
Kansas	1,170	111,536	1.0	[12]	.....	.....
Kentucky	10,636	58,000	18.3	[13]	.....	.....
Louisiana	697	24,962	2.8	75	299	38
Maine	3,264	25,528	12.8	260	1,323	648
Maryland	2,706	17,025	15.9	330	978	787
Massachusetts	8,928	17,272	51.7	184[14]	1,113[15]	967
Michigan	8,859	68,906	12.8	694	2,437	1,754
Minnesota	6,206[16]	91,890	6.8	305[17]	4,242	8,364
Mississippi	1,800	44,072	4.1	[10]	.....	.....
Missouri	8,000	120,000	6.6	[18]	[18]	6,250
Montana	100	23,319	0.4	[12]	.....	.....
Nebraska	250	80,338	0.3	[19]	.....	.....
Nevada	65	12,751	0.5	[20]	.....	.....
New Hampshire	1,025	15,116	6.8	149	1,024	875
New Jersey	4,500	14,842	30.3	102	1,935	2,000
New Mexico	900	16,920	5.3	50[21]	357	.....
New York	22,398	80,112	27.9	863[22]	5,167[23]	4,000[23]
North Carolina	6,166	49,802	12.4	[12]	.....	.....
North Dakota	200	61,593	0.3	[12]	.....	.....
Ohio	28,312	88,681	33.8	151	569	340
Oklahoma	500	71,325	0.7	.....	.....	.....
Oregon	3,994	42,930	9.3	125	309	.....
Pennsylvania	3,976[2]	87,387	4.5	360	1,889	6,882
Rhode Island	1,246	2,121	58.8	2	325	325
South Carolina	4,888	45,549	17.3	[9]	.....	.....
South Dakota	290	56,354	0.5	[12]	.....	.....
Tennessee	5,554	45,913	12.1	[8]	.....	.....
Texas	9,790	128,971	7.6	[10]	.....	.....
Utah	1,653	7,970	20.7	66[24]	1,072	.....
Vermont	3,278	15,082	22.7	200	1,631	4,252
Virginia	4,482	43,399	10.3	751[25]	2,916	.....
Washington	4,250	37,000	11.5	288	1,024	340
West Virginia	825	31,629	2.6	[12]	.....	.....
Wisconsin	11,500	61,090	18.8	695[26]	2,632	.....
Wyoming	450	10,569	4.3	[20]	.....	.....
Total	247,490	2,273,131	10.9	6,805	35,477	39,988

[1] Also 59 miles of road graded, but not surfaced. [2] Data approximate. [3] Also 77 miles of road graded, but not surfaced. [4] No money aid for construction. [5] In addition, 2,823 miles of earth road were graded. [6] Does not include 3,500 miles of grading. [7] Includes reconstruction, 33 miles. [8] No State highway department in 1914. [9] Convict labor aid to counties. [10] No State highway department. [11] Supervisory. [12] Educational and advisory. [13] State aid begins 1915. [14] Includes 83 miles of small town construction. [15] State roads only. [16] Also 3,700 miles of graded road. [17] Also 1,104 miles of grading and turnpiking. [18] Mileage not reported. [19] State aid in bridge construction only. [20] Maintenance of State convict road camps. [21] Also 198 miles of graded road. [22] In addition, 844 miles of town and county roads. [23] State and county highways only. [24] Also 314 miles of earth roads. [25] Also 104 miles of earth road graded. [26] Also 602 miles of grading.

supervisory powers. The wording of the law, however, is not very definite, and court decisions will very likely be required to define definitely the extent of the powers of this department. The funds for the maintenance of the department are limited to one-tenth of the net annual motor-vehicle registration revenue of the state. The powers and duties of the Flor-

ida state road department are limited to those of an advisory and supervisory nature in regard to road work in the various counties. The funds of the department are derived from 15 per cent. of the county motor-vehicle registration revenues.

Mileage, Appropriations, and Expenditures.—The accompanying tables adapted from U. S. Department of Agriculture Circular No. 52, prepared by the Division of Road Economics, Office of Public Roads and Rural Engineering, give the state and local expenditures, mileage, etc., more fully than can be expressed in any other form. The value of the convict labor and statute labor, which is estimated at a grand total of $15,000,000, is not included in these tables.

WATERWAYS AND HARBORS

T. W. Van Metre

Appropriations.—As was the case with the River and Harbor bill of 1914 (*A. Y. B.*, 1914, p. 278), the bill of 1915, containing appropriations of almost $50,000,000, failed of enactment, and Congress for a second time appropriated a lump sum for river and harbor improvement. The amount appropriated was $25,000,000, but it was provided that unexpended funds heretofore appropriated might be transferred to present projects up to the amount of $5,000,000, making an aggregate of $30,000,000 available for use during the fiscal year 1916. As was done in 1914 the Chief of Engineers has apportioned the funds among various projects the undertaking of which has been decided upon. The Sundry Civil Act of March 3, 1915, carried an appropriation of $3,982,000 for the continuance of river and harbor improvement already under contract. The total appropriations for river and harbor improvements since the establishment of the Government amount to $853,737,950.82. During the fiscal year ending June 30, 1915, the Government expended $43,771,509.76 on river and harbor work.

Boston.—The board of port directors of Boston, which came into office in 1914, is making plans for a comprehensive development of the port. The Secretary of War has approved its suggestion as to changing the harbor lines, so that about 30,000,000 sq. ft. of land in East Boston may be reclaimed and equipped with shipping facilities. New 1,600-ft. piers are to be constructed; back of the piers warehouses and an anchorage basin are to be provided, and beyond these a large area is to be devoted to manufacturing and industrial uses. Railroad yards will be provided with special track connections with warehouses and factories. The new plan will permit uniform development on both the East Boston and the South Boston sides of the harbor channel. The flats from Jeffries Point to Governor's Island will gradually be filled in, providing an additional frontage of more than a mile, which will be developed on a unit basis.

New London.—The sub-structure of the new state pier at New London is about finished and the superstructure of steel sheds and concrete warehouses is being built. The dredging to connect the slip areas with the 33-ft. channel to be provided by the Government is more than half completed.

New York.—The Federal Government is continuing the improvement of Staten Island Sound, Newark Bay and the Passaic River, is removing the obstructions in East River, and is deepening the Hudson River adjacent to the New Jersey shore. A channel 30 ft. deep and 800 ft. wide will be dredged off Ellis Island along the pierhead line to Newark Street, Hoboken. When this is completed vessels 500 ft. in length can dock safely at Jersey City. The city has provided for the appointment of a commission of three experts to make a thorough survey of the port and suggest a more efficient system of terminal facilities; the money necessary for the work of the commission has not yet been appropriated, however. The legislature has authorized the construction of the Brooklyn Marginal Railroad, which is to be built at a cost of $15,000,000. The road, which will be operated jointly by the

trunk-line railroads entering New York, will link together all the great terminals of South Brooklyn, including those of the Bush Terminal Co. and of the New York Dock Co. A large freight yard will be established at Red Hook, close to the Barge Canal Terminal. The construction of three new municipal piers in South Brooklyn, at Twenty-ninth, Thirtieth and Thirty-fifth streets, has been authorized by the Board of Estimate and Apportionment. The largest of the piers will be 1,779 ft. by 150 ft. Arrangements have already been made for leasing the piers. (See also XI, *Public Services.*)

Newark.—Newark has purchased 930 acres of meadow land with a frontage of 4,000 ft. along lower Newark Bay at a cost of $300,000, and contracts have been let for dredging a channel 200 ft. wide and 20 ft. deep connecting the shore line with the government channel and continuing 2,500 ft. into the meadows. The excavated material will reclaim 156 acres of marsh land, which can be used for industrial purposes. Contracts have also been let for bulkheading a portion of the new terminal area, for the construction of a dock 4,500 ft. long, and for dredging an additional length of 200 ft. along the entire length of the channel. The total cost of the harbor improvement will be approximately $2,000,000, which has been authorized by the legislature. At Bayonne the Lehigh Valley Railroad Co. is building a huge ore pier to handle the ore brought from Chile by the Bethlehem Steel Co.

Philadelphia.—The Chief of Engineers, U. S. Army, has allotted $1,000,000 for the continuation of the dredging of the 35-ft. channel of the Delaware River below Allegheny Avenue. The city is improving the Schuylkill River, aided by a state appropriation of $250,000. The two new Southwark municipal piers were dedicated on Oct. 16. The piers are 550 ft. by 180 ft. and cost approximately $1,850,000. Philadelphia now owns seven modern commercial piers. The contract has been let for the construction of the first of the ten Moyamensing piers, which are a part of the project for port development described in the YEAR BOOK for 1914 (p. 280).

The city of Trenton has appropriated $100,000 for the development of its river front and $50,000 for the construction of a municipal dock, work on which was begun in May.

Baltimore.—Baltimore has expended $6,161,000 on municipal docks and has available $5,000,000. The city now owns 13 piers with a wharfage front of 26,000 ft., and is planning to extend the system.

South Atlantic Harbors.—Work on the harbor of refuge at Cape Lookout, N. C., has been started. The Chief of Engineers has allotted $235,000 to the work on the harbor of Savannah during the current year, and $350,000 to the improvement of St. Johns River below Jacksonville.

New Orleans.—The great municipal cotton warehouse of New Orleans is rapidly nearing completion. The plant covers an area of 100 acres and will have at the outset a capacity of 2,000,000 bales. The capacity will ultimately exceed 4,000,000 bales. The city has sold bonds to the amount of $1,250,000 for the construction of a grain elevator, which will be located adjacent to the cotton warehouse. The board of commissioners of the port of New Orleans now controls 42 miles of river frontage and over 20 municipal wharves, valued at $2,200,000. The Chief of Engineers has allotted $400,000 for continuing the work of improving the Southwest Pass of the Mississippi during the fiscal year of 1916.

Galveston.—The city of Galveston was visited on Aug. 16 with a hurricane approximating in severity the one which nearly destroyed the city in 1900; the great sea wall successfully withstood the storm and as a result the damage to property was relatively small (see also XXI, *Civil Engineering*). In August the Houston terminal facilities of the ship channel from Galveston to Houston, including a turning basin, a municipal wharf and a warehouse, were completed, and Houston took its place as a Gulf port. The channel to Galveston which was dredged in Buffalo Bayou at the joint expense of the Federal Government and Har-

ris County, Texas, is 50 miles long, 200 ft. wide and 27 ft. deep. Several factories are being constructed along the canal.

Pacific Harbors.—The Federal Government is improving Humboldt Harbor and Bay and Grays Harbor. Nearly $2,000,000 has been allotted to the continuation of the Columbia River improvement below Portland; and that city is deepening its harbor area to 30 ft. The canal connecting Lake Washington with the outer harbor of Seattle is almost completed.

Lake Harbors.—Extensive improvements will be made by the Army engineers during the current year at Buffalo, Chicago, Cleveland, Conneaut, Racine and Indiana Harbor. At Cleveland the new passenger and freight terminals of the Cleveland and Buffalo Transit Co. and the Detroit and Cleveland Navigation Co. were opened on June 6. Under the terms by which these improvements were constructed they will revert to the city in 40 years.

Rivers.—The work on the construction of the dam and lock in the Hudson River at Troy, which was interrupted because of the filibuster over the 1914 River and Harbor bill, has been resumed, and it is expected that the lock will be ready for service at the opening of navigation in 1916.

Large sums of money are still being devoted to the improvement of the Mississippi River System. Nearly $6,000,000 have been allotted for the continuance of the work on the Mississippi River itself above the head of the passes. Two more of the Ohio River dams were finished during the year, bringing the total number completed up to 15. Of the appropriation for river and harbor improvement contained in the Sundry Civil Act, $3,200,000 was for the locks and dams of the Ohio; and the Chief of Engineers has assigned $3,330,000 of the regular appropriation to this work. The improvement of the navigation of the Missouri River has been subjected to much criticism during the year, but the deepening work already planned will be completed. The inauguration of steamer service between La Salle, Ill., and New Orleans was the chief feature of the progress of Mississippi River navigation during the year. Freight shipped by barge from Chicago to La Salle, *via* the Illinois and Michigan Canal, will constitute the chief portion of the freight traffic of the new service.

The completion of Dam No. 17 in the Warrior River has given active water communication between the great Warrior coal field and Mobile and New Orleans. The channel depth of six feet is now available as far as Cardova, Ala., on the Mulberry fork of the Warrior, and as far as Nichols, Ala., on the Locust fork, each approximately 425 miles from Mobile. A New Orleans company is now operating a barge line on this route, and a considerable through and local coal traffic is being built up.

On April 28, 1915, the Dalles-Celilo Canal around the rapids in the Columbia River at Dalles was opened to navigation. This work, which cost about $6,000,000, permits navigation from the mouth of the Columbia River to Lewiston, Idaho. The minimum depth to the mouth of the Snake River is six feet, thence to Lewiston 30 in.

The second canal and third lock in St. Mary's River between lakes Superior and Michigan have been completed, and about one-fifth of the work on the fourth lock has been done. The new lock, which was authorized in 1907, is 1,350 ft. long, 80 ft. wide, and 245 ft. deep. The fourth lock, which was authorized in 1912, will have the same dimensions. Of the two older locks the Weitzel, which was completed in 1881, is 515 ft. by 80 ft. by 18 ft. and the Poe, opened in 1896, is 800 ft. by 100 ft. by 21 ft.

New York Barge Canal.—The work of constructing the New York State Barge Canal is almost 90 per cent. completed, and about 160 miles of the new system are in use. The official opening of the state canals to navigation in 1915 was also the occasion of the opening of the section of the new canal from the Hudson River at Waterford to the entrance into the old canal at Rexford. Five electrically operated locks having a combined lift of 169 ft. are included in this section, which is 17 miles long.

On account of the excess of the

cost of construction above the original estimate of $101,000,000, due to increased cost of labor and materials, changes in the plans of locks and bridges, and the necessity of meeting heavy damage claims, it was necessary for the state to supply additional funds for construction work. A legislative appropriation of $3,654,000 was made to complete the contracts already entered into in excess of available funds, and a popular referendum on a further bond issue of $27,000,000 was authorized. The proposal was approved by a large majority on Nov. 2, and sufficient funds are now assured for the completion of the waterway. Of the proceeds of the new bond issue almost one-half will be needed for construction work, and the remainder will be used to extinguish damage claims and to reimburse the state treasury for the legislative appropriation of $3,654,000. Because of the lack of available funds it has been impossible to let contracts for the work yet necessary for the completion of the canal, and the time needed for the work has consequently been extended. The remaining construction will now soon be provided for, and it is hoped that the entire canal system will be finished early in 1917. (See also XXI, *Civil Engineering.*)

Panama Canal.—Minor slides on both sides of Gaillard Cut caused the suspension of traffic on the Panama Canal from Aug. 7 to 10, and from Sept. 4 to 9. A huge slide from the east bank of the cut directly north of Gold Hill completely closed the channel on Sept. 18, since when traffic through the canal has entirely ceased, except for the passage of a few vessels of light draft through a channel opened temporarily on Dec. 20.

The labor force on the canal on Aug. 25 numbered 25,424 men. The work of terminal construction at each end of the canal is progressing rapidly, new piers, fuel oil stations and a dry dock at the Pacific entrance being added to the existing facilities.

Up to Aug. 15, 1915, which marked the end of the first year of operation, 1,317 vessels with a gross tonnage of 6,494,673 tons, had passed through the canal (see also XX, *Merchant Marine*). The net tolls collected from vessels during the first 11½ months of operation amounted to $4,909,150.96, and the gross tolls, including the tolls on vessels of the United States Government which were not collected, aggregated $5,023,236.85. During the fiscal year (10½ months) ending on June 30, 1915, the tolls collected amounted to $4,343,383.69 as compared with canal operating and maintenance expenses amounting to $4,066,727.31. There was, therefore, an excess of revenue amounting to $276,656.38, but this does not include any allowance for interest on the investment, depreciation of plant or other non-operating expenditures. The total operating revenues and expenses during the fiscal year 1915 (Aug. 15, 1914, to June 30, 1915) were as follows:

Expenses	
Operation and maintenance proper	$4,066,727.31
Net cost of other business operations	2,469,642.42
Canal Zone Government	288,887.60
Operating expenses, Panama Railroad	2,607,479.26
Operating expenses, Panama Railroad Steamship Line	2,142,603.68
Cost of commissary operations	6,595,410.50
Cost of operating Hotel Washington	97,546.76
Cost of operating plantations	15,018.19
Total expenses	$18,283,315.72
Revenues	
Tolls	$4,343,383.69
Panama Canal, other business operations	2,413,241.64
Canal Zone revenues	186,684.46
Operating revenues, Panama Railroad	2,787,056.83
Operating revenues, Panama Railroad Steamship Line	2,642,457.10
Receipts from commissary operations	6,666,644.84
Receipts from Hotel Washington	78,436.45
Receipts from plantations	6,362.83
Land rentals collected	112,550.23
Total revenues	$19,236,818.07
Revenues in excess of expenses	953,502.35

The excess of $953,502.35 is purely an operating excess, no allowance being made for interest on the investment of nearly $400,000,000.

XI. PUBLIC SERVICES

Richard C. Harrison

PUBLIC SERVICE COMMISSIONS

General Tendencies in Utilities Regulation.—The year 1915 was one in which most of the states held legislative sessions. It was, therefore, a test year, by which it could be determined just how much advance the plan of regulating public utilities by state commissions was making in those states which had not adopted the plan. Although bills were introduced in the legislatures of most of these states, providing for the establishment of more or less strong commissions, but one new public-utilities commission was created during the year. There was a slight strengthening of the law in a few of the states, while in certain others legislative proposals to add to the powers of the commissions were defeated. The year has been marked by continued unrest and dissatisfaction in a number of the cities of the country with the substitution of state control for local power in the matter of regulating strictly municipal utilities. This has been the case notably in Pennsylvania, where strong efforts were made either to repeal the Public Utilities Act or to confine the activities of the state commission to matters which affected the entire state.

One of the important problems in connection with public-utility commissions has always been whether these bodies should be placed in the position of protecting monopolies in public-utility service. One strong faction has always contended that public utilities are natural monopolies and that the state commissions should be given authority to prevent competition, which would lead to needless duplication of plans and a corresponding economic waste. An almost equally strong sentiment has developed against placing the commissions in a position where they could prevent any form of competition in their discretion. Attention was called in the Year Book for 1914 (p. 290) to the practical working of the statute in Wisconsin, where it appears that certificates of convenience and necessity for new companies have almost uniformly been denied. During 1915 a proposition to extend the powers of the Ohio commission to cover control of competition was defeated by a very large vote in the state legislature (see *infra*).

There has been no change in the tendency noted in previous years in the matter of changes in personnel in the commissions. There seems to be a growing disposition on the part of state executives to regard public-service commissionerships as spoils of office and to make appointments without regard to particular fitness or experience in office. The displacement of the last original commissioner in the New York City commission, a man widely esteemed for ability and experience, was unfavorably commented upon in the local press and was almost universally regretted (see *infra*).

The most important event affecting utility regulation during the year was probably the investigation of the two New York commissions, described in detail under the notes on that state (see *infra*).

On Dec. 30, 1914, there was inaugurated in Philadelphia an interesting experiment in coöperative effort by the various municipalities throughout the country in the establishment of a Utilities Bureau. This bureau was the outcome of a general conference of mayors of American cities held in Philadelphia in November,

1914 (proceedings in *Annals Am. Acad. Pol. and Soc. Science*, Jan., 1915). Morris L. Cooke, director of the Department of Public Works of the city of Philadelphia, was appointed the acting director, and Dr. Charles R. Van Hise of the University of Wisconsin president of the board of trustees. An elaborate programme for the collection of data bearing upon municipal public utilities has been drawn up. In general it provides for the collection of data relating to service and rates, including cost factors in municipal utilities, and the preparation of this data in such form that it may be of service to cities, public bodies and interested citizens generally. It is proposed to codify the decisions of public-service commissions and other judicial bodies passing upon utility matters. It is proposed also to publish information concerning service standards, rates, franchises, public contracts, "and any and all other matters of interest and value to the public and to corporations regarding the construction, operation, maintenance and regulation of public utilities." Such a central bureau, directed by such competent experts as have been secured in this instance, should be of very great value not only to the cities of the country but to law-making bodies and to the public generally. (See also VII, *Municipal Organizations.*)

Alabama.—During the year various proposals were made for the creation of a public-utilities commission in Alabama, and bills were introduced in the legislature to create a commission to take over the powers of the present Board of Railroad Commissioners and to extend this jurisdiction over various classes of public utilities. No law was enacted.

Arkansas.—The Little Rock Board of Trade presented to the Arkansas legislature a strong petition in favor of the creation of a public-utilities commission to be modeled upon the lines adopted in the state of New York. This recommendation was endorsed by the State Board of Railroad Commissioners in a report to the legislature, but no law was passed.

California.—The California Public Service Commission has been reorganized (Laws of 1915, Ch. 91). The new commissioners are Max Phelan and E. O. Edgerton to serve for a six-year term, H. D. Loveland and F. R. Devlin for a four-year term, and Alexander Gordon for a two-year term. A constitutional amendment adopted in 1914 (*A. Y. B.*, 1914, p. 202) has given the Commission exclusive power to fix public-utility rates in all incorporated municipalities. California is one of the states which started by giving control over public utilities exclusively to municipalities but which is gradually changing over to the theory of state regulation.

Idaho.—The Idaho Public Utilities Commission created in 1913 was decidedly weak upon the side of financial control (*A. Y. B.*, 1914, p. 296). It followed the precedent established in most of the states where the development of large corporations operating public utilities has not advanced to a point which makes the need for government supervision over their financial operations appear a serious problem. The Commission during 1915 strongly recommended to the legislature an amendment to the law giving it control over the creation of indebtedness by companies under its jurisdiction. The Commission also recommended that "the law should be fully amended to give the Commission detailed supervision of the disposition of proceeds realized from the sale of stocks or the issue of bonds." No action was taken, however, upon the recommendation. Certain unimportant amendments were made by Chapter 62 of the Laws of 1915.

Indiana.—Local dissatisfaction with methods employed by certain of the stock yards in Indiana led to proposals during the year to amend the public-utilities law to include stock yards under the jurisdiction of the Public Service Commission. The proposed legislation was unsuccessful. The time within which a corporation might surrender a perpetual for an indeterminate franchise was extended to July 1, 1917 (L. 1915, Ch. 110).

Kansas.—There has been at work in Kansas a commission charged with reporting to the legislature upon the efficiency of the public-utilities law

and the suggestion of any amendments which appear to be desirable to strengthen it. J. D. Joseph, chairman of this commission, has reported that the existing statute is "reasonably comprehensive and efficient." No amendments of any importance were made in the law during 1915.

Missouri. — Local dissatisfaction with methods employed by certain of the stock yards in Missouri led to proposals during the year to amend the public-utilities law to include stock yards under the jurisdiction of the Public Service Commission. As in Indiana, the proposed legislation was unsuccessful.

New Hampshire.—After delaying the appointment for a number of months, the Governor finally decided to reappoint Thomas W. D. Worthen, a former professor of mathematics in Dartmouth College, a chairman of the New Hampshire Utilities Commission. The matter of reappointment of experienced public-utility commissioners has been the subject of considerable public agitation and attention in New Hampshire as in most of the other states where commissions have been created.

New Jersey.—One of the most important issues in New Jersey during the year was the final disposition to be made of the so-called 90-cent rate cases, in which a determination of the Public Service Commission fixing the rate for gas at 90 cents in various cities in the state (*A. Y. B.*, 1913, p. 305) has been under review in the courts.

New York.—With the inauguration of each new governor it has been the custom in New York to investigate the Public Service Commissions. The administration of Governor Whitman, who took office on Jan. 1, has been no exception to the rule. One of the first statements of the Governor was that he desired to satisfy himself as quickly as possible both as to the efficiency of the Public Service Commissions and the adequacy of the public-service commissions law. At the beginning of the legislative session a number of bills were introduced for the purpose of legislating the existing commissioners out of office and creating one or more new commissions to operate under a revised public-service commissions law. There early developed, however, an unwillingness on the part of the leaders in the legislature to assume responsibility for "ripper legislation," and it was ultimately decided to leave the responsibility for possible changes in personnel in the two Commissions to the Governor. In order to provide a basis for possible changes a joint investigating committee of the legislature was appointed early in January with Senator George F. Thompson as chairman. The legal advisor to the Governor, William Hayward, was selected as counsel to this committee and hearings were immediately begun, starting with an investigation of the New York City Commission. Beyond showing a certain lack of familiarity with the duties imposed upon them by law, this committee developed nothing of importance. Its report to the Governor charged all of the commissioners, with the exception of Milo R. Maltbie, whose term expired on Feb. 1 and who was allowed to continue as a hold-over commissioner, with general inefficiency. No definite recommendation for removal was included in the report, this matter being left entirely in the discretion of the Governor. After a public hearing the Governor dismissed all charges and allowed the commissioners to continue in office. He did not, however, reappoint Mr. Maltbie but substituted in his place Colonel Hayward, the counsel to the legislative committee. With the passing from office of Mr. Maltbie the last of the original public-service commissioners appointed by Governor Hughes went out of office. The committee brought similar charges of inefficiency against the Commission for the Second District but these also were dismissed by the Governor. To fill the vacancy in this Commission J. O. Carr, manager of the General Electric Co., was appointed.

The investigating committee had been divided along political lines in reporting on the inefficiency of the commissioners. It was divided in the same manner upon its recommendations for changes in the public-service commissions law. The majority recommended changes removing control over security issues and also weaken-

ing the power of the Commissions to investigate accidents. No action was taken by the legislature upon the suggested changes in the law, but the matter was referred back to the legislative committee for further investigation. Hearings were continued during the fall. As a result charges were made against Chairman McCall for holding stock in a company subject to the regulation of the Commission. He was removed by the Governor on Dec. 6, and Oscar S. Straus was appointed to the chairmanship. On Dec. 27 Commissioner George U. S. Williams resigned as of Feb. 1, 1916.

The only important change in the statute made during 1915 was the inclusion of motor omnibuses under the jurisdiction of the Public Service Commissions. Partly as a result of the political threats to remove public-service commissioners, the Constitutional Convention included the office in the new state constitution defeated on Nov. 2. The provision was as follows.

> The Department of Public Utilities shall consist of two public-service commissions. Commissioners shall be appointed by the governor by and with the advice and consent of the Senate. The governor may remove any commissioner for cause after service upon him of a written statement of the alleged cause and an opportunity to be heard thereon. Until the legislature shall otherwise provide, the existing commissions are continued with the jurisdiction and powers at present vested in them.

Ohio.—The Public Utilities Act of Ohio gives to the Commission no control over competition between public-service companies. During the year the so-called Sprague bill was introduced in the legislature to require a company desiring to enter the public-service field to obtain from the Commission a certificate of convenience and necessity before beginning business. This legislation is in line with the statutory provisions in the more advanced states, notably Wisconsin and New York. The bill was defeated, however, by a vote in the House of 18 to 75.

Pennsylvania.—The history of public-service commission legislation in the state of Pennsylvania has been a stormy one. Prior to the creation of the Public Service Commission which went into office on Jan. 1, 1914, a very vigorous campaign was carried on by the Home Rule League to prevent the legislature from taking away from the cities of the state their control over public utilities. Although, as stated in the YEAR BOOK for 1914 (p. 292), the Commission voluntarily greatly limited their powers, the opposition to any form of state control over local utility matters continued unabated throughout the year 1915. At the beginning of the legislative session the so-called Home Rule League secured the introduction of a bill abolishing the Commission and establishing a public-service bureau as a part of the Department of Internal Affairs. A second bill providing simply for the abolition of the Commission was introduced at the same time. A third measure was considered which did not affect the existence of the Commission but attempted to confine its jurisdiction to companies operating throughout the entire state. This, of course, would have given it very narrow functions and would practically have eliminated entirely control over municipal utilities. All of these measures were violently debated and aroused considerable feeling throughout the state. None of them was enacted, however, and the Commission continues with the powers originally conferred upon it. It is practically certain, however, that agitation for the abolition of the Commission or the radical amendment of the law will be continued, particularly in the interest of the city of Philadelphia.

Texas.—There has been in Texas a continuation of agitation for a public-utilities commission, which has been urged upon the legislature during several recent sessions. The Secretary of State in a report submitted to the legislature strongly advocated the creation of a public-utilities commission to take the place of the State Board of Railroad Commissioners. He proposed that the jurisdiction of this body should include not only street and steam railroads but gas and electric companies, telephone companies, pipe lines, water, wharf and warehouse companies. The proposed legislation, however, was not enacted.

Utah.—Utah is one of the few remaining states without general state control of public utilities. Bills have been introduced in the legislature from time to time to create public-utility commissions upon models familiar in the other states. These have been uniformly defeated because of the opposition by the municipalities of the state to general state control. A bill was introduced in January, 1915, which was long and seriously debated but which was ultimately defeated upon the theory that the public-utility problem in Utah had not reached dimensions to justify the expense of creating for its control a state board with elaborate machinery.

Washington.—C. A. Reynolds, the chairman of the Washington Public Utilities Commission, has taken the position that the state public-utilities law has removed from the jurisdiction of the various municipal authorities all power over public-utility rates. The question of division of jurisdiction between state and local authorities is receiving considerable attention in Washington as in a number of other states. The problem, however, does not appear to be as acute as in Pennsylvania or Illinois. During the year the Commission established branch offices in Tacoma, Seattle and Spokane for the purpose of giving more detailed consideration to specific municipal problems.

West Virginia.—The West Virginia Public Service Commission was originally created with four members, one of whom devoted practically his entire time to matters connected with the administration of the workmen's-compensation law. The Governor in his annual message to the legislature recommended the reduction of the Commission from four to three members, separating the workmen's-compensation matters from the work of the Commission and placing them under the control of a separate official. He also recommended that the Commission be bipartisan by statute, with two of the three members appointed from the controlling political party. The suggestion was made also that the state attorney-general be relieved of his duties in connection with representation of the Commission in legal matters, and that these be handled by a special counsel appointed by the Commission. Further recommendation was made that the Commission be given control over utility rates, and that private electric companies be included under its jurisdiction. The recommendations of the Governor were approved by the legislature, to take effect on June 1, 1915. The new act provides that new commissioners be appointed to hold office for two, four and six years, respectively, and that subsequent appointments be made for the full term of six years.

Wyoming.—A Public Service Commission was created in Wyoming on March 4, 1915, consisting of the governor, the state treasurer and the auditor, with power "to regulate and supervise every public utility within the state." The act (Laws of 1915, Ch. 146) is confined to rate and service control. (See also XX, *Railroads.*)

MUNICIPAL OWNERSHIP

Progress of Municipal Ownership.—There is little of interest to report in the field of municipal ownership for the year 1915. Owing to financial conditions brought about by the European War the market for the flotation of municipal bonds was not particularly favorable, and consequently few of the cities embarked upon municipal-ownership projects of any considerable size. The establishment and improvement of municipally owned markets continues to occupy the attention of many American cities (see *infra*). This movement has undoubtedly been stimulated by the same conditions which have held back other municipal-ownership projects. The problem of reducing the high cost of living has been intensified by conditions produced by the European War. The important municipally owned projects in the larger American cities continue to show satisfactory results, according to the annual reports of the local officials in charge. The Cleveland lighting plant, which in 1914 reduced its rate to

three cents per kilowatt-hour, reports a net profit of $30,000 (see under *Lighting, infra*). The municipally owned railways of San Francisco continue to show profits gratifying to the taxpayers and plans are under way for extensions of the system. Plans for the municipalization of gas plants in Kalamazoo, Mich., and Duluth, Minn., have been under consideration during the year but have not materialized (see under *Lighting, infra*). The exercise of rate-making functions by the various public-service commissions in operation throughout the country has undoubtedly done much to retard the municipal-ownership movement, communities finding that they may secure measurably satisfactory results by appeals to these bodies to secure reductions in rates where they appeared excessive. During the year substantial progress was made in perfecting plans for the great municipal freight-railroad project in the South Brooklyn district now in process of construction by the city of New York (see *infra*).

Chicago.—Late in the fall of 1914 Chicago opened its first municipal markets. There are several of these located in congested quarters, all of them in charge of agents appointed by the Markets Commission. Consumers are circularized by notices printed in English and a number of foreign languages giving information as to the location of the markets and the advantages to be derived from their use. In addition, a well conducted campaign was carried on among truck farmers within a radius of 25 miles of the city, notifying the farmers that places would be reserved for them in these market places upon application. According to reports the markets have been reasonably successful.

Chattanooga.—Late in 1914 the city of Chattanooga, Tenn., established a large municipal market which, according to recent reports, is very successful. Stalls are rented at the rate of 50 cents per front foot, with power in the commissioner of markets to raise the amount to 75 cents per foot at the end of six months and $1 at the end of a year. It is reported that the market is paying expenses and is well patronized.

New York.—Attention has been called in previous issues of the YEAR BOOK (1913, p. 302) to a project to which the Board of Estimate and Apportionment of New York City is committed, consisting of the construction, at an estimated cost of approximately $14,000,000, of a freight railroad along the Brooklyn waterfront extending from Brooklyn Bridge to 65th Street. This plan when completed will create a freight-handling unit approximately five miles in length, giving direct rail access to the entire waterfront with its piers and bulkheads from the adjacent upland. It is the most ambitious municipal-ownership transportation project now under consideration by any American city. During 1915 the way was cleared by legislation for the making of a contract by the city whereby the road when completed may be operated by a corporation in which the various trunk-line railroads reaching the port of New York may hold stock and bonds. The plans of the city contemplate complete municipal ownership of the road but private operation by such a corporation, provided satisfactory operating terms can be agreed upon. Negotiations are still under way with a committee representing all the trunk-line railroads reaching the port of New York and it is confidently expected that an agreement providing for operation will be reached very shortly. The Board of Estimate and Apportionment has set aside from the debt limit sufficient city bonds to ensure the construction of the road.

As noted in the YEAR BOOK for 1914 (p. 295), New York made an interesting experiment in setting aside a number of public places for "farmers' markets." During 1915 these were transferred from the jurisdiction of the borough presidents and were placed under the bureau of city revenue and markets of the city comptroller's office. The purpose of the change was to provide for efficient regulation and to permit a reasonable charge to be made to standholders for the privilege of selling. The plan has been reasonably satisfactory and most of the markets originally established have demonstrated their permanent usefulness. The

farmers' market located in the vicinity of the Fort Lee Ferry at West 129th Street was discontinued during the year because of injunction suits brought by property owners in the neighborhood, alleging that the city could not use dock department property for other than essentially commercial purposes connected with the waterfront proper.

In October there was completed, at a cost of over $500,000, the renovation of the so-called Washington Market, a publicly owned market which has been in existence for over a hundred years. The restoration consisted of a complete modernization and rebuilding, making it one of the best modern sanitary market structures in the country. In an address at the opening Mayor Mitchel forecast the city's market policy as follows:

> The new Washington Market is a link in a chain of retail markets which I hope that the city will sometime own and control. Such a system of retail markets will be a part of a still more comprehensive system of food distribution. The entire plan will comprise wholesale terminal markets which will receive supplies of all kinds for distribution with the least possible handling and waste and will have a marked effect in keeping down the cost of living.

Massachusetts.—During the year a statute was passed by the Massachusetts legislature providing that all cities and towns in Massachusetts having a population of 10,000 or over should either establish public markets or in default thereof designate one or two streets or public squares to be used as "farmers' markets."

Ohio.—During the year the Ohio Senate defeated by a vote of 9 to 18 the so-called Horn bill, permitting villages to own gas and electric plants. The measure was beaten by an active campaign carried on by opponents of municipal ownership.

WATER SUPPLY

Problems of Urban Water Supply.—The year 1915 has been a relatively important one in the matter of the carrying to completion of a number of very important water supply projects. It has also marked the initiation of extensive plans for additional sources of supply for many of the larger cities of the country. There has been generally a continuation of the country-wide campaign for conservation of water, both through protection of sources of supply and strict supervision over consumption and water waste. Several cities, notably Philadelphia and Schenectady, have made important additions to their systems of metering water to private consumers. As urban population increases the problem of adequate water supply is necessarily becoming more and more acute and is attracting widespread attention from engineers and municipal authorities generally.

Baltimore.—The city of Baltimore has during recent years been making extensive additions to its water-supply system (*A. Y. B.*, 1914, pp. 296, 553). In July, 1915, there was completed a thoroughly modern filtration plant at Lake Montebello. This project cost $1,500,000 and provides a plant with a filtration capacity of 128,000,000 gals. a day.

Des Moines.—As noted in the YEAR BOOK for 1914 (p. 297), Des Moines has had under consideration for some time the purchase and municipalization of the plant of the Des Moines Water Co., upon which a purchase price of $3,202,000 had been set. Owing to the confused character of the ballot used in the special election held in March, 1914, the project was defeated. An attempt was made during 1915 to correct this situation. Although the matter received favorable consideration by the voters, it was ultimately held that the time of the city to exercise its purchase at the price of $3,202,000 had expired by limitation and the city was without power to acquire the plant at this rate over the objection of the water company.

New York.—The city of New York, according to the report of the Board of Water Supply made in September, 1915, is consuming a daily total of 550,000,000 gals. This enormous total practically exhausts the capacity of the present watersheds and work has been pressed hard upon the new Ashokan system in order to make this

new supply available before the water situation actually becomes acute. During 1915 practically all of the heavy construction work was completed and the end is well in sight. The Board reports that to September, 1915, the total cost of the project to the city of New York has amounted to $135,000,000. Some idea of the magnitude of the work can be gathered from a statement made in the report that there have been as many as 17,243 laborers employed at one time in the construction forces. From the Ashokan reservoir it is almost a three-days journey for the water to reach the city mains. The construction which is already actually completed comprises the Esopus watershed, with a capacity of 250,000,000 gals. per day, and a portion of the Ashokan impounding reservoir with a storage capacity of 75,000,000 gals. (See also XXI, *Civil Engineering.*)

Despite this enormous addition to the water-supply facilities of New York, the authorities are even now investigating additional sources of supply. As noted in the YEAR BOOK for 1914 (p. 296), preliminary negotiations were begun in 1914 with the state authorities to permit the use of the so-called Schoharie watershed. Most of the legal difficulties in this connection were cleared away in 1915 and the Board of Water Supply reports that borings are being made in the vicinity of Prattsville to select sites for dams across Schoharie Creek.

The city during the year had a bitter fight with the state authorities to prevent the possible pollution of Croton Lake. It was proposed to drain into this lake, which is an important part of the existing watershed, sewage from the Mohansic State Hospital for the Insane at Yorktown. The state planned to put in purification plants which, in the opinion of their engineers, would make the use of the lake unobjectionable for this purpose. Numerous protests were filed with the Governor by the Mayor of New York City and by a number of prominent local interests. The plan was ultimately defeated.

Mobile.—The city of Mobile has been considering plans for some time for an enlargement of its municipal water supply. During the year the city purchased 890 acres of land at Clear Creek and plans to build an extensive water-supply system.

Portland, Ore.—In view of the widespread and growing public feeling in favor of the metering of water to prevent waste and financial loss, it is somewhat surprising to find that at a special election held in May a proposition to install water meters throughout the city of Portland was defeated by a vote of 15,820 to 19,483.

Providence.—The city of Providence has been hard pressed to secure adequate facilities for the expansion of its water system. During the year the Rhode Island legislature passed an enabling act permitting the city to acquire the necessary property and erect modern water works at Scituate. The act is broad in its terms and does not limit the amount which the city may invest in this project. The estimate of the state engineers places the ultimate cost of land acquisition and construction work at between 10 and 15 million dollars. Work on the project will begin at once and it is contemplated that the completed new system will be finished in from five to eight years. It will be constructed upon a scale which it is estimated will take care of the needs of the city for an indefinite number of years to come.

San Francisco.—In April a proposition to purchase extensive properties at Spring Valley at an estimated cost of $34,500,000 for use for reservoir and water-supply purposes was lost by a vote of 39,955 for, to 33,467 against, it being necessary upon propositions of this nature to secure two-thirds vote in favor for adoption. The proposition to purchase land at Spring Valley has been before the voters on previous occasions and has heretofore received a much larger vote. The adjustment of the Hetch Hetchy matter with the United States Government (*A. Y. B.*, 1913, pp. 27, 270, 304, 581) has greatly lessened the need for the Spring Valley land, which undoubtedly accounts for the reduction in the vote in favor of this question.

Kansas.—The Governor of Kansas in his annual message to the legislature recommended a statute to pro-

vide for the furnishing by municipalities of free water to the inhabitants of the state to a maximum of 50 gals. per individual. His argument was that water was as much a necessity of life and the proper subject of municipal activity as street lighting and the various other public utilities supplied without substantial charge to the individual citizens. The necessary legislation was not adopted, however.

New Jersey.—The cities of New Jersey have been in an unfortunate situation in connection with their water-supply systems owing to uncertainty concerning the legal powers of the state water-supply commissioner in acquiring land for the necessary watersheds. Early in the year the important project of providing water supply for southern New Jersey municipalities by the purchase of the so-called Wharton tract in Atlantic and Bergen counties was killed by a decision of the Court of Errors and Appeals, which held that the proposed bond issue of $1,000,000 in the name of the State Water Supply Commission was unconstitutional. The Wharton tract was originally purchased as part of a proposed water-supply system for the city of Philadelphia. This project was subsequently abandoned and the tract has been under favorable consideration for some time as the best available site for a combined water plant for a number of the New Jersey cities.

Similar difficulty, complicated by local jealousies, has prevented the establishment of a very large and important combination water plant for the northern cities of the state known as the Wanaque project. The cities of Paterson, Passaic, Montclair, Newark and some smaller towns have displayed bitter jealousy in connection with this possible source of supply. An adjustment was reached during 1915 which seems to clear the way for the ultimate carrying out of the project. As a part of the plan the cities of Paterson, Passaic and Montclair employed Edward Bemis as an expert to value the plant of the East Jersey Water Co., which it was proposed to purchase. A tentative adjustment valuing this plant at $9,000,000 has been reached. After the decision of the Court of Errors and Appeals in the Wharton case legislation was introduced to correct the situation and to legalize the Wanaque project. This was passed and received the approval of the Governor.

Oregon.—By an act of the legislature passed during 1915 the cities of the state of Oregon were authorized to enter into agreements among themselves for the construction of joint water-works plants, somewhat upon the plan of the various joint water works in sewerage districts in other parts of the country. The legislation will be of very great service to a number of the smaller cities that now have under consideration plans for the extension of their water-works systems but which, owing to financial conditions, are unable to carry such projects without assistance.

LIGHTING

Rate Adjustments.—In the lighting field the chief matters of adjustment between the companies and the various municipalities continue to be those bearing upon rates for public and private service. The most important rate concession during the year was that made in New York City by the electric companies in Manhattan and the Bronx, which was largely brought about by disclosures made during hearings held by the local Public Service Commission (see *infra*).

The important municipal electric plant in the city of Cleveland continues to show satisfactory financial results despite a very low rate for service (see *infra*). During the year several long standing disputes between municipalities and lighting companies were settled upon a compromise basis.

Cleveland.—The municipal electric plant which, as stated in the YEAR BOOK for 1914 (p. 297), on May 1, 1914, reduced the rate for current to three cents per kilowatt-hour, reports as a result of its first year of operation a net return of $30,000. This figure is disputed by some of the opponents of municipal ownership but

the city officials assert that the figure quoted is a true net return.

Duluth.—The city of Duluth decided during the year to discontinue the use of gas entirely in its lighting of streets. In addition to more efficient light it is claimed that the change has resulted in a saving of over $600 per year.

During the year a proposition to establish a municipal electric plant in West Duluth, estimated to cost $85,500, was defeated by 317 votes, and subsequently an offer by the Duluth Edison Co. of a rate of six cents per kilowatt-hour was accepted, although a strong effort was made to reduce the rate to four cents. A proposition to purchase the main plant of the Duluth Edison Co. was considered and C. D. Pillsbury and W. R. Rittenhouse were appointed by the city as appraisers to value the plant. They fixed a value for the plant of $1,107,940.54, which the company refused to accept.

Grand Rapids. — Grand Rapids, Mich., has been engaged during the year in a hot fight with its gas company in the matter of rates. It became necessary to renew certain franchises held by the company and the city employed William C. Newbeggin to make an appraisal and to report upon a proper rate. This expert reported that a rate of 66.69 per 1,000 cu. ft. could be fixed and still permit the company to make eight per cent. on its investment. A proposition to grant a franchise upon the basis of a 75-cent rate was defeated by a vote of 7,050 to 7,069, 60 per cent. of the total electorate being necessary to the granting of a franchise. A proposition to renew the present franchise at the present rate for a five-year term was also defeated.

Kalamazoo.—Kalamazoo, Mich., has been trying for some time to municipalize its gas plant but has been unable to agree upon a figure acceptable to the company. During the year a proposal was made by the municipal authorities to arbitrate for the purchase of the entire plant of the Kalamazoo Gas Co., fixing an upset price for this arbitration of $975,000. Previous to this proposition the city had made a flat offer of $800,000, which the gas company had refused.

Los Angeles.—Prior to the going into effect of an amendment to the constitution of California vesting rate-making powers exclusively in the Public Service Commission, the city of Los Angeles by its council fixed the rate for gas at 64.5 cents per 1,000 cu. ft., this being a reduction under the existing rate of 3.5 cents, provided that this rate should go into effect as of July 1, 1915.

New York.—During the year an extremely important reduction was made in the electric-light rates in the boroughs of Manhattan and the Bronx in the city of New York. The rate was reduced from ten cents to eight cents per kilowatt-hour. This reduction became effective as a result of a formal order of the Public Service Commission made after lengthy investigation and hearings. The order was agreed to by the N. Y. Edison Co. and is to remain in force as an experiment for a term of three years. It is provided, however, that the company may make a charge for lamp renewals, which previously were taken care of as part of the ten-cent rate. The Commission estimates that the reduction means a present to consumers of between one and one-half and two million dollars. Commissioner Maltbie, who presided over the hearings upon which the rate was fixed, recommended that the rate be reduced to six and one-half cents per kilowatt-hour for light and to six cents for power. His contention was that the evidence showed conclusively that at these rates the company would receive a fair return upon its investment. The Commission compromised the matter, however, upon the basis stated.

St. Louis.—A relatively important readjustment was made in St. Louis in reference to the electric company during the year, conceding reductions to certain classes of consumers. A rate of three cents per kilowatt-hour was fixed for consumers who use more than seven kilowatt-hours per month per active room.

St. Paul.—St. Paul, after a series of negotiations with the St. Paul Gas Co., came to an adjustment in March, 1915, for the fixing of a rate of 85 cents to become effective from Jan. 1, 1916. The agreement gives the

right to the company to bill consumers at an additional 20 cents per 1,000 cu. ft., which is to be deducted in the event of prompt payment. A 75-cent rate is fixed in the case of large consumers. This agreement and readjustment carries with it a repeal of the ordinance of May 20, 1914 (*A. Y. B.*, 1914, p. 297), which fixed the rate for the company at 85 cents effective immediately. The matter has been in course of adjustment since the passage of this ordinance.

New Jersey.—The Public Service Commission having fixed the rate for gas at 90 cents per 1,000 cu. ft. in a number of the important cities of the state, the matter was carried into court by the Public Service Corporation, alleging that the decision of the Commission was *ultra vires*. The company was successful in the lower court and the matter was reargued late in 1915 before a higher court. In order to avoid any question as to the legality of subsequent decisions, the legislature passed a law making the powers of the Public Service Commission clear in the matter of fixing rates.

SEWAGE AND REFUSE DISPOSAL

Pollution of New York Harbor.—The protection of river and harbor waters from excessive pollution continues to be the most important problem among those presented for the consideration of municipal authorities in the United States. Attention has been called in various volumes of the YEAR BOOK (1913, p. 305; 1914, p. 299) to the growing seriousness of pollution of the Hudson River and of the harbor of New York. Following the elaborate report of the Metropolitan Sewerage Commission for the city of New York, noted in the YEAR BOOK for 1914 (p. 299), the matter was taken up by the Board of Estimate and Apportionment and a special committee of city engineers appointed to consider the report and present ways and means for measures to correct the more glaring evils disclosed by the study. The financial condition of the city precluded any immediate consideration of the $21,000,000 system proposed by the Metropolitan Sewerage Commission. It is hoped, however, that at least a beginning can be made toward providing for a satisfactory system of sewage disposal and the prevention of excessive pollution in New York harbor.

Bronx Valley Sewer.—The lower Hudson has become so seriously contaminated that during the summer of 1915 the New York City Board of Health prohibited the opening of a number of bathing places which formerly had been maintained within the city limits. Attention has been called in previous issues of the YEAR BOOK (1912, p. 289) to an agreement which was made July 17, 1912, between the commissioners of the Bronx Valley Sewer and the United States Government, which provided for the purification of sewage emptied into the Hudson from the enormous trunk sewer serving cities and towns along the valley of the Bronx. Upon the basis of this agreement, the United States Government withdrew an injunction suit which was pending in the United States Supreme Court. The agreement provided for the completion of the purification plant by May 1, 1913. The time was subsequently extended to May 1, 1914, and the Bronx Valley Sewer commissioners acquired a site for such a purification plant. In October, 1915, the Merchants' Association of the city of New York, which had been extremely active in the matter of protecting the Hudson River against this additional source of pollution, petitioned President Wilson, alleging that "the formal agreement made by the commissioners with the United States Government in which the United States Government withdrew its suit, has been violated by the commissioners and the poisoning of the river by the raw sewage continues in increasing volume." It is confidently expected that unless the condition is remedied the Federal authorities will take prompt action to prevent any continuance of this nuisance.

Passaic Valley Sewer.—In March, 1915, the last contract was awarded for the construction of the enormous trunk sewer which is to serve a number of New Jersey cities and towns

in the Passaic valley (*A. Y. B.*, 1913, p. 306). At that time it was reported by the authorities in charge as being three-fifths completed.

Philadelphia.—An important sewage survey was made during the year by the Bureau of Surveys of the city of Philadelphia, somewhat along the lines of the study of the Metropolitan Sewerage Commission in New York City and with findings which called for the construction of an almost equally elaborate system of sewage disposal works. The report recommends that "to protect health the city should spend $5,000,000 annually for the next five years for the construction of the necessary works for the collection, treatment and disposal of sewage." The plans formulated by the bureau divide the city into three districts, two of which are to discharge into the Delaware River and one into the Schuylkill River. It is proposed to treat sewage by combined process of screening and sedimentation. The bureau estimates the total cost of carrying its plans into effect at $34,600,000.

Cleveland.—The street-cleaning department of Cleveland has put into practice an interesting experiment in the matter of securing volunteer assistance for the work of the department. In coöperation with the principals of public schools in certain congested districts it has organized the students of the upper grades into junior-order service leagues. The city department provides badges and furnishes the members of the leagues with copies of city ordinances and regulations governing the care of streets. Each district organization assumes responsibility for the streets in the district and the inspection of yards. Reports concerning conditions to be remedied are made direct to the commissioner of street cleaning. Volunteer-aide certificates are prepared by the department for the officers of the organizations. At the close of the school year a premium is to be given to the most efficient volunteer officer in the city. By the organization of these leagues the superintendent hopes to accomplish three things: first, the securing of cleaner streets and yards through the coöperation of school children; second, to give the school children an idea of the workings of the city department; and third, to awaken civic pride among them. It is reported that the plan has proved of great assistance to the department.

New York.—The city of New York has been at very great expense in the past in disposing of its household refuse. It has been unable to make a long-term contract sufficient to justify a contractor in putting up a disposal plant and the municipality has therefore been more or less at the mercy of existing contractors without the opportunity for any real competition. During the year the city made an active campaign before the legislature to secure the right to contract for 15 years for garbage disposal. The mayor stated that this would mean a saving of at least $1,400,000 to the city. The matter was strongly opposed before the legislature by a number of interests who objected to contracts of this nature and who alleged that the plan involved certain expenditures on the part of the city in the matter of the erection of disposal plants. The so-called Lockwood-Perlman bill which carried out the ideas of the city authorities was ultimately defeated.

Portland, Ore.—By a vote of 13,186 to 20,507, the voters at a special election in May defeated a proposition for the installation of a municipally operated system of garbage collection similar to that in most of the larger cities of the country.

Snow Removal.—The problem of clearing streets of large cities from accumulations of snow is a serious one in the United States. The various cities have been put to enormous expense in removing snow without securing satisfactory results. During the winter of 1915 important experiments were conducted in the cities of New York and Philadelphia in the matter of utilization of sewers for snow removal. In New York City Commissioner Fetherston of the Department of Street Cleaning claims that in this manner at least a million dollars annually can be saved in years of normal snow fall. He reports that the 1915 experiment was very satisfactory and did not result in the clogging of the sewers.

XII. MILITARY AND NAVAL

THE ARMY

ROBERT B. MCBRIDE

Administration.—The internal administration of the Army has been continued during the year 1915 by practically the methods authorized and directed in 1912 (*A. Y. B.*, 1912, p. 292; 1913, p. 307; 1914, p. 300). Very little new legislation affected the service, although some special items in the Army Appropriation Act of 1915 are of sufficient importance to demand notice. The Act authorizes the President, by and with the advice and consent of the Senate, to transfer to the active list of the Army any officer retired for physical disability, under 50 years of age, with rank not above that of captain, provided such retired officer shall pass a satisfactory mental and physical examination. Officers so transferred are to take the rank they would have held if they had continued in active service, instead of being on the retired list. It is understood that the object of this law is to make available the services of retired officers who have recovered from their disabilities. The Act authorized commutation of quarters at places where no public quarters are available, and provided also for commutation of heat and light. These changes will prove economical, and will undoubtedly save much labor and prevent confusion. Another clause in the Act provided that captains of the Porto Rico Regiment should be recommissioned as captains of the United States Army.

During the year military preparedness has received much public attention, and the condition and size of the Army and Navy have become one of the questions of the day. So far as relates to the Army, the matter has been the subject of thorough study by the War College and the General Staff. In a "Statement of a Proper Military Policy for the United States," prepared by the General Staff by direction of the Secretary of War, 230,000 officers and men are given as the proper number of combatant troops, including the Coast Artillery. Proper numbers of staff troops and the Philippine Scouts bring this number to a total of 289,000 for the Regular Army. No recommendations regarding militia were made in this statement, except the repeal of certain laws referring to acceptance into the United States service. Recommendations were made with a view to providing an efficient reserve, composed of men from the Regular Army and trained civilians, bringing total forces at the beginning of any war to 1,000,000 officers and men.

Various plans will be submitted to Congress. At the end of the year there were three almost ready for consideration. First, what is known as the Administration plan contemplates increasing the Regular Army from 100,000 to approximately 141,000 rank and file, and the addition of about 790 extra officers for use in training the Continental Army and the Militia; the raising of a Continental Army of about 500,000 men, by yearly increments of practically 34,000, these forces to enlist for six years and to receive training two months in each of the first three years, going into the reserve for the next three; lastly, this plan provides more Federal assistance for the Organized Militia. What is known as the "Hay bill" makes very little increase in the number of enlisted men of the regular mobile forces, provides for 52 more companies of Coast Artillery without any officers, provides for a Continental Army, and for graduated pay for the Militia. The Hay bill also proposes to largely increase the numbers of officers in the

AUTHORIZED STRENGTH OF THE ARMY

	Major-Generals	Brigadier-Generals	Colonels	Lieutenant-Colonels	Majors	Captains	First Lieutenants	Second Lieutenants	Chaplains	Total Commissioned Officers	Enlisted Men
General officers	8	17	....	....	....	.....	.....	.....	....	25	.....
Adjutant-General's Department	....	1	5	7	10	.....	.....	.....	....	23	.....
Inspector-General's Department	....	1	3	4	9	.....	.....	.....	....	17	.....
Judge-Advocate General's Department	....	1	2	3	7	.....	.....	.....	....	13	.....
Quartermaster Corps	1	2	12	18	48	102	.....	.....	....	183	403[1]
Medical Department	1	....	14	24	105	239	225[2]	.....	....	608[2]	([3])
Corps of Engineers	....	1	15	22	51	60	56	43	1	249	1,942
Ordnance Department	....	1	6	9	19	25	25	.....	....	85	765
Signal Corps	....	1	1	2	6	22	74	.....	....	106	1,472
Bureau of Insular Affairs	....	1	1	....	1	.....	.....	.....	....	3	.....
Fifteen regiments of cavalry	....	....	15	15	45	225	225	225	15	765	14,148
Six regiments of field artillery	....	....	6	6	12	66	78	78	6	252	5,535
Coast Artillery Corps	....	1	14	14	42	210	210	210	14	715	19,019
Thirty regiments of infantry	....	....	30	30	90	450	450	450	30	1,530	35,339
Porto Rico Regiment of Infantry	....	....	....	....	....	11	10	10	1	32	599
Military Academy	....	....	4	3	....	.....	.....	.....	....	7	632
Detached officers	....	....	8	9	27	82	74	.....	....	200	.....
Additional officers	....	....	26	1	....	.....	1	.....	....	28	.....
Recruiting parties, recruit depots, and unassigned recruits	....	....	....	....	....	.....	.....	.....	....	.....	6,098
Service-school detachments	....	....	....	....	....	.....	.....	.....	....	.....	746
United States Disciplinary Barracks guards	....	....	....	....	....	.....	.....	.....	....	.....	350
With disciplinary organizations	....	....	....	....	....	.....	.....	.....	....	.....	110
Mounted orderlies	....	....	....	....	....	.....	.....	.....	....	.....	7
Indian scouts	....	....	....	....	....	.....	.....	.....	....	.....	75
Total Regular Army	10	27	162	167	472	1,492	1,428	1,016	67	4,841	87,240
Philippine Scouts	....	....	....	....	....	52	65	65	....	182	5,733
Grand total	10	27	162	167	472	1,544	1,493	1,081	67	5,023	92,973

[1] Under the act of Congress approved Aug. 24, 1912, the 6,000 authorized enlisted men of the Quartermaster Corps are not to be counted as part of the strength of the Army.

[2] Includes 104 first lieutenants of the Medical Reserve Corps on active duty and 60 dental surgeons.

[3] Under the act of Congress approved Mar. 1, 1887 (24 Stat. L., 435), the enlisted men of the Medical Department (Hospital Corps) are not to be counted as part of the strength of the Army. The authorized strength of the Hospital Corps is 4,012 enlisted men.

mobile forces, especially Cavalry and Infantry in the higher ranks, and an increase in the number of first lieutenants in the Coast Artillery. The "Chamberlain bill" would result, if passed, in material increases in all branches of the regular forces, with the necessary officers. The probabilities are that still other plans will be submitted to Congress, and no definite statement can now be made as to what results will be. (See also I, *The Sixty-Fourth Congress.*)

War Department.—The Chief of Staff, Gen. Hugh L. Scott, was promoted from brigadier- to major-general on June 20, and Brig.-Gen. Gorgas, the surgeon-general, was made major-general on March 4. No other changes among the chiefs of corps and departments have occurred during the year.

Distribution of Combatant Troops.—The First Division of the Regular Army, Major-Gen. Leonard Wood, is in the Eastern Department, with two companies of engineers, one company and a platoon of signal troops, one regiment of cavalry, four regiments of infantry, two ambulance companies and a field hospital. In addition to the forces mentioned, the North At-

lantic Coast Artillery District, Brig.-Gen. Harry F. Hodges, and the South Atlantic Coast Artillery District, Col. Stephen M. Foote, C. A. C., are in this Department.

The Second Division headquarters are in the Central Department. The Division comprises the fourth and fifth brigades. In the Department are three regiments of cavalry, a field hospital and an ambulance company. The Department is temporarily commanded by Col. D. A. Frederick of the Infantry. Most of the troops are absent on duty along the Mexican border and in the insular possessions.

The Southern Department, commanded by Major-Gen. Frederick Funston, has its headquarters at Fort Sam Houston, Texas. In this Department there are the Cavalry Division, the 13th Cavalry (less one troop), two regiments and a battalion of field artillery, 12 infantry regiments, one company and a platoon of the signal corps, and two field hospital and ambulance companies.

In the Western Department, headquarters at San Francisco, Cal., are stationed troops of the Third Division, in addition to the troops of the Pacific Coast Artillery District. Major-Gen. William H. Carter commands the Department and the Division, and Brig.-Gen. William L. Sibert commands the Artillery District.

The Philippine Department embraces all the islands of the Philippine Archipelago. The troops consist of two companies of engineers, two companies of the signal corps, a field hospital and ambulance company, two regiments of cavalry, one regiment of field artillery, four regiments of infantry, and sixteen companies of coast artillery. This Department is commanded by Major-General Thomas H. Barry.

In the Hawaiian Department is the First Hawaiian Brigade, commanded by Brig.-Gen. Frederick S. Strong; the 2d Infantry, 4th Cavalry, 1st Field Artillery, one company of engineers, one company of the signal corps, and nine companies of coast artillery. Brig.-Gen. John P. Wisser commands the Department.

Appropriations.—The amount of $104,489,662.90 was appropriated under the various acts of Congress authorizing the expenditure of funds for the military service for the year ending June 30, 1916. The appropriations were as follows:

Support of the Army	$96,519,195.87
Military Academy	1,069,813.37
Militia	5,440,000.00
Fortifications	6,060,216.90
Arsenals	653,600.00
Military Posts and Miscellaneous	570,924.99
Total	$110,313,751.13

The appropriations for 1916 are $1,430,434.82 less than the expenditures for 1915. In addition to the 1916 appropriations stated, further sums totaling $44,233,270.34 were authorized for expenditure by the War Department on civil matters, including rivers, harbors, public buildings, etc.

The Regular Service.—During the whole of the year a large part of the infantry, cavalry and field artillery of the Army has been on continuous duty along the Mexican border. Several clashes have occurred between the troops and raiders from the Mexican side of the Rio Grande, who were generally bandits, trying to take advantage of the chaotic conditions. Casualties have occurred, some soldiers having been killed, and a considerable number wounded. It was thought quite recently that many of the troops on the border might be relieved, but events have prevented the return of any great number. The Regular Army has not been called upon to quell any domestic disturbance during the year. On account of the recognition of the Constitutionalist Government in Mexico by the South American republics, this Government and several European countries, it is hoped that the necessity for the strong border guard will soon be a thing of the past. In November, 741 officers and 19,944 men were on duty along the border.

The Mobile Army.—No large maneuvers occurred during the year for the same reasons that prevented them in 1914, namely, the absence of most of the regiments from their stations. More stress has been laid than ever before on training in strictly military lines, and to that end paper work at military posts has been reduced to the lowest possible limit, in order that officers may devote most

of their time to the actual work of instruction. Camps have been instituted in various parts of the country for the wider dissemination of military knowledge. One of the most notable of these was the camp at Plattsburg Barracks, N. Y., for business and professional men. Large numbers of the leading men in the country took advantage of this opportunity and the value to the nation of this one camp cannot be measured in dollars and cents. There were three other similar camps. Four camps for the instruction of students from schools and colleges were held and were very successful.

In the cavalry and infantry new methods are being tried out, and it is believed that there are no better troops of these arms in any army in the world. The public prints have had a great deal to say about the "inefficiency" of the Army. A better word to use would be "inadequacy"; the small numbers of troops are utterly inadequate for the tremendous task which would be theirs in case of a war with even a second-class power, but they are remarkably efficient in all that pertains to their profession.

The Coast Artillery.—The present war in Europe has demonstrated more thoroughly than ever before the axiom that well defended and well armed coast fortifications cannot be taken by naval attack. The forts on the Dardanelles have so far defied all attempts of the combined Allied fleets. As a natural consequence of this object lesson, our own coast artillery is brought prominently before the public eye. Practically the same conditions as to officers and men exist as in 1914 (*A. Y. B.*, 1914, p. 304), that is, the present defenses require about 2,000 officers and 48,000 men, while we actually have about 1,150 officers and 26,000 men, of whom 441 officers and 7,000 men are militia. Five additional companies were sent to the Philippines, and six to the Canal Zone in the summer and fall of 1915. This made it necessary to reduce garrisons to the vanishing point at several coast forts in the United States. The Coast Artillery, in addition to training in its special technique, has received instruction and drill in field maneuvers as infantry, and drill and practice with field guns and howitzers; each fort is supplied with a certain number of such guns, for use in repelling attacks from the landward side of forts. Reports so far received indicate that the usual high standards have been reached in the year's target practice. The results of night practice with the heavy guns have been very good.

The Quartermaster Corps.—In the Quartermaster's Department supplies and services have been kept up. and considerable work has been done on reserve stocks. Several appropriations have been consolidated into the appropriation "Supplies, Services and Transportation of the Army," greatly simplifying the work of quartermasters at posts and in the field. Construction work has been carried on in the Philippines, Hawaii, the Canal Zone, and at certain posts in the United States.

The Ordnance Department.—Action has been taken by the Ordnance Department with a view to increasing the ranges of all seacoast guns, and toward providing heavy mobile artillery, such as is now being used for the first time in Europe, with the necessary transportation therefor. Supplies, ammunition and arms are being provided in as large quantities as funds furnished will permit.

The Engineer Corps.—Organizations of the engineers have served in all sections of the country and in the Philippines, Hawaii, Alaska and the Canal Zone during the year. A camp for training the engineers of the militia was established at Belvoir, Va., and instruction was carried on there during the summer. The work of the Engineer Corps in river and harbor improvement is reviewed elsewhere in this volume (see X, *Waterways and Harbors*).

The Signal Corps.—The Aviation School at San Diego has been in operation now for over a year. A thorough course of instruction is given, with the object of providing a large number of military aviators. In its other activities this corps handles the supply of communication lines and instruments, such as telephones, buzzers, telegraph and radio instalments; and trains telegraphers, radio operators,

telephone men, linemen, electrical engineers, and signal-men. It has charge of all Army work of the character indicated, besides handling and administering all of the Alaska telegraph lines. It furnishes also telescopes, field glasses, heliographs, and various other types of signalling devices and observing instruments for use in the field.

The Medical Corps.—The health of the Army has been good during the year. On account of close inspection, and strict preventive measures, many formerly dangerous diseases have been practically eradicated from the service. A lessening of alcoholism is still apparent, and advances have been made along other lines. The researches made at the Army Medical Museum and work of officers in the service at large are responsible for the sanitary wellbeing of the troops. There were only seven cases of typhoid during the year, and of these, five had not received the complete prophylactic treatment. (See also XXVIII, *Public Health.*)

The Military Academy.—There are now about 500 cadets at the Military Academy at West Point. Many vacancies were not filled in 1915, although provision has been made to accept examination certificates. In case any increase is made in the Army, it seems absolutely necessary that some law be passed whereby vacancies existing after a certain specified date may be filled by the President.

Recruiting.—During the first three quarters of the year (ending Sept. 30), there were 25,680 applicants for enlistment accepted at general recruiting stations. Previous records indicate that this number is about one-fifth of all applicants, but total figures showing proportions are not available. Of the applicants noted 3,490 were rejected at recruiting depots, leaving 22,190 men finally enlisted. It is probable that these figures have been increased by practically half as many more during the last three months of the year. An excellent class of young men enlist in the Army, and every effort is made to take only those who are mentally, morally and physically fit for the profession of the soldier.

Education in the Army.—The educational system of the Army begins for officers with the Military Academy. In the service itself the work is carried on, first, by means of the garrison schools. All officers, beginning on their entrance into the service, take a four-years' course in these schools, along with their regular work. The subjects studied include among others, tactics, strategy, military law, international law, hippology, field service, military engineering, hygiene, and seacoast engineering. After this course is finished there are the technical schools of the various arms and corps, such as the Engineer School at Washington Barracks, D. C., the Artillery School at Fort Monroe, Va., the School of Fire at Fort Sill, Okla., and others. Certain selected officers are eligible for the Staff College at Fort Leavenworth, Kans., and selected officers are sent to the War College at Washington, D. C. The education of the enlisted man begins with his first enlistment, in his drills and daily work. For such as desire a better education, there are post schools, under the supervision of an officer, at every post; generally the primary school branches are taught, including reading, writing, arithmetic, geography and history. Opportunity is given, however, for instruction in the higher branches, especially mathematics and modern languages. In the Engineers Corps men are trained as surveyors, draftsmen, photo-lithographers, carpenters, pipefitters, masons, electricians, enginemen, firemen, riggers, calkers, saddlers, etc. In the Coast Artillery, the instruction embraces cordage, angle-measuring instruments, drawing, steam, gas, and oil engines, surveying, firing, stenography, typewriting, explosives, electrical work of almost every kind, etc. The Signal Corps trains telegraphers, signal men, packers, carpenters, etc., while there are schools for bakers and cooks, for farriers, and for blacksmiths. In an article as brief as this, it is not possible to give more than a general idea of the educational activities of the Army, but there is little doubt that the training and instruction given not only makes soldiers but is of great value to the country in other ways.

STRENGTH OF THE ORGANIZED MILITIA, 1914

(As reported at the annual inspections, Jan. 1 to May 31)

	Signal Corps		Cavalry		Field Artillery		Coast Artillery Corps		Infantry		Total[1]	
	Officers	Enlisted men	Officers	Enlisted men	Officers	Enlisted men	Officers	Enlisted men	Officers	Enlisted men	Officers	Enlisted men
Alabama	....	....	....	....	11	316	....	....	141	2,254	163	2,609
Arizona	....	....	....	....	....	....	....	....	40	633	45	645
Arkansas	....	....	....	....	....	....	....	....	91	1,400	109	1,402
California	3	84	16	237	19	263	41	716	139	2,194	252	3,604
Colorado	3	47	9	244	6	228	....	....	83	1,314	122	1,933
Connecticut	3	71	6	125	2	75	45	697	97	1,427	177	2,511
Delaware	....	....	....	....	....	....	....	....	33	452	41	465
District of Columbia	3	57	....	....	4	91	....	....	92	1,494	124	1,721
Florida	....	....	....	....	....	....	....	....	60	1,053	73	1,075
Georgia	....	....	18	229	12	214	14	143	153	1,877	225	2,490
Hawaii	....	....	....	....	....	....	....	....	44	843	56	858
Idaho	....	....	....	....	....	....	....	....	45	815	58	839
Illinois	3	51	36	522	14	260	....	....	375	4,375	508	5,447
Indiana	3	61	....	....	13	225	....	....	130	1,717	169	2,109
Iowa	....	....	....	....	....	....	....	....	186	2,930	217	3,014
Kansas	....	....	....	....	5	98	....	....	110	1,597	132	1,720
Kentucky	....	....	....	....	....	....	....	....	140	2,123	164	2,210
Louisiana	....	....	3	46	13	245	....	....	35	679	65	1,009
Maine	....	....	....	....	....	....	44	677	49	687	108	1,404
Maryland	....	....	3	57	....	....	....	....	129	1,848	157	1,986
Massachusetts	3	86	16	230	17	332	48	718	271	3,836	424	5,369
Michigan	3	56	6	97	12	127	....	....	144	1,995	189	2,478
Minnesota	....	....	....	....	36	626	....	....	159	2,568	220	3,243
Mississippi	....	....	....	....	....	....	....	....	74	974	94	990
Missouri	4	89	2	59	7	204	....	....	203	3,373	244	3,840
Montana	....	....	....	....	....	....	....	....	36	624	40	636
Nebraska	4	86	....	....	....	....	....	....	101	1,208	132	1,384
Nevada[2]	....	....	....	....	....	....	....	....	....	....	....	....
New Hampshire	1	37	3	61	5	133	16	214	53	800	90	1,280
New Jersey	4	59	10	176	10	199	....	....	236	3,447	304	4,014
New Mexico	....	....	....	....	4	133	....	....	44	760	57	910
New York	6	155	59	921	60	1,063	106	1,839	548	10,251	974	15,591
North Carolina	....	....	6	89	....	....	20	354	145	1,865	209	2,367
North Dakota	....	....	....	....	....	....	....	....	53	656	60	679
Ohio	11	113	17	207	16	254	....	....	365	4,644	490	5,637
Oklahoma	5	163	5	118	....	....	....	....	47	942	77	1,330
Oregon	....	....	3	66	5	76	34	521	46	706	100	1,401
Pennsylvania	3	57	31	449	9	156	....	....	616	9,219	745	10,190
Rhode Island	....	....	11	157	5	112	67	988	....	....	96	1,303
South Carolina	....	....	....	....	....	....	....	....	140	1,770	156	1,794
South Dakota	....	....	....	....	....	....	....	....	55	851	68	873
Tennessee	....	....	3	48	....	....	....	....	94	1,611	117	1,798
Texas	....	....	14	207	3	94	....	....	140	2,373	192	2,731
Utah	3	52	....	....	5	88	....	....	16	261	29	419
Vermont	....	....	15	153	....	....	....	....	49	645	75	817
Virginia	3	69	....	....	17	215	....	....	163	2,255	206	2,606
Washington	4	77	3	76	....	....	15	283	55	851	88	1,312
West Virginia	....	....	....	....	....	....	....	....	91	1,481	104	1,517
Wisconsin	....	....	3	68	4	87	....	....	166	2,689	193	2,931
Wyoming	....	....	....	....	....	....	....	....	46	742	54	760
Total	72	1,470	298	4,642	314	5,914	450	7,150	6,328	95,109	8,792	119,251

[1] Totals include: general officers of the line (31); officers in departments of adjutants-general (98), inspectors-general (47), paymasters-general (10), and judge advocates-general (48); quartermaster corps (157 officers, 108 enlisted men); subsistence departments (19 officers, 17 enlisted men); medical departments (783 officers, 3,556 enlisted men); corps of engineers (78 officers, 1,246 enlisted men); and ordnance departments (59 officers, 39 enlisted men).

[2] No Organized Militia (mustered out May 20, 1906).

The Organized Militia.—The aggregate number of the Organized Militia at the end of the last inspection season was about 128,000; of this number, there were 8,792 officers, and 119,200 enlisted men. The accompanying table shows the organization of the Organized Militia. Its members deserves great credit for their work, but labor under the disadvan-

tages that must always be present under existing laws. It is understood that it will be the policy of the War Department to give more assistance than ever before to this branch of the armed forces.

One of the principal difficulties in making the militia available as a first- or second-line force is the rapid changes in enlisted personnel; one set of men may get a few weeks' training one year, but the next year organization commanders in many cases have practically a new lot to break in. The average American is under the impression that a uniform and a little drill makes a soldier, but these things are only the very beginning of his instruction. It takes time, under modern conditions and habits of thought, to inculcate the spirit of service to country and to comrades, and the habits of unquestioning obedience which a soldier, and especially a soldier of a republic, must have. This spirit is present in the Organized Militia to a much greater degree than seems to exist generally, but it must be fostered carefully; and its cultivation is a work of time, precept, and example.

No new legislation affecting the Organized Militia has been passed. It is probable that some changes may be made in the laws governing the relations borne by the state troops to the Federal Government during the present Congress. At present the militia do not get enough training in the basic principles of discipline and service. In drill itself many organizations are efficient, and some of them remarkably so. These troops are well supplied, but much difficulty has been experienced in enforcing the necessary regulations for the proper care and preservation of arms and accouterments.

Pensions.—The total amount paid as pensions since 1790, including the year 1914, was $4,729,957,370.94; to this should be added the sum of $165,518,266.14 for 1915, or a grand total for pensions of $4,895,475,637.08. The cost of administering the Pension Office from 1866 to 1915, inclusive, was $129,718,333.09. From 1866 to 1915, inclusive, the total amount paid on account of pensions was $4,928,748,525.04, or approximately $98,574,970.50 for each year since 1866. Pensions were paid during the fiscal year 1915 on account of the different wars in which the country has been engaged as follows:

War of the Revolution (estimated)	$70,000,000.00
War of 1812	45,972,895.76
Indian War	13,315,227.19
War with Mexico	49,618,948.68
Civil War	4,614,643,267.43
War with Spain and Philippines	49,944,441.84
Regular establishment	35,472,408.77
Unclassified	16,508,477.41
Total	$4,895,475,637.08

At the close of the fiscal year 1915, there were 748,147 names on the pension rolls; of these 19,730 were of the Regular Army, 691,606 for the Civil War, 28,912 for the war with Spain, 4,933 for the Mexican War, 2,832 for Indian wars, and 134 for the war of 1812. Pensions were paid to 300,452 widows, and 3,854 minors. There were paid under special acts of Congress 21,648 pensions, with a value of $6,640,722. This amount is included in the grand total stated heretofore. The largest sum paid to pensioners in any one state for the year was that for Ohio, $15,666,667.11; Pennsylvania was second with $15,275,745; while the smallest amount, $80,586.22, was charged to Nevada. There were 73 pensioners in Alaska, who drew $16,243.22, and 4,660 in foreign countries, to whom were paid $945,220.19. The average value of a single pension in 1915, was $179.12; the smallest average value was for the war with Spain, $133.22, and the largest for the Civil War, $226.53, for the year. The average value of Civil-War pensions has increased from $177.78 in 1911 to the amount stated above in 1915, or $48.75. The lowest pension paid is $6.00 per month, 29 in number; there are 26 at $100.00 per month and one each at $125.00, $166.66⅔, $208.33⅓, and $416.66⅔, all of them being widows' pensions. The net loss in number of pensions for 1915 was 37,092, an increase in losses over 1914 of 2,059; 52,329 pensioners died, 608 remarried, and 715 minors attained the age of 15 years. There were 17,064 new allowances, and 324 restorations and renewals during the year.

THE NAVY

J. H. Junior

Navy Department.—The organization of the Navy Department has undergone few alterations during the year. The most important change was the creation, by the Naval Appropriation Act of March 3, of the office of Chief of Naval Operations. This office is "charged with the operations of the fleet, and with the preparation and readiness of plans for its use in war." He is appointed for four years by the President, with the consent of the Senate, and while so serving, holds the rank of rear-admiral. During the temporary absence of the Secretary and the Assistant Secretary, the Chief of Naval Operations acts as Secretary of the Navy. Capt. William S. Benson (now Rear-Admiral) was selected as the first Chief of Naval Operations. During the year Secretary Daniels established also an Advisory Council, whose name indicates its functions, composed of the Chief of Naval Operations, the chiefs of the various bureaus of the Navy Department (see V, *Executive Departments*), the Commandant of the Marine Corps, and the Judge-Advocate-General.

The Commandant of the Marine Corps was appointed a member of the General Board of the Navy during the year. The duties of this Board, as laid down in the Navy Regulations, are:

(1) To devise measures and plans for the effective preparation and maintenance of the fleet for war, and to advise the Secretary as to the distribution of the fleet and reinforcements.

(2) To prepare and submit plans (revised to date) of campaign, including cooperation with the Army and the employment of all the other elements of naval defense.

(3) To submit annually recommendations on types of vessels to be built, condition of personnel, etc., and the estimates therefor.

(4) To advise in regard to the location, protection and capacity of all navy yards, etc.; also in regard to supply and delivery of reserve munitions and stores.

(5) To coördinate the work of the War College and the office of Naval Intelligence, and to consider and report on naval operations, maneuvers, tactics, organization, training, and such other subjects as the Secretary may lay before it.

The General Board reaches conclusions and advises, but possesses no executive powers. Its recommendations may or may not receive consideration.

In addition to the boards, councils and bureaus mentioned, the administration of the Navy requires the following offices, which are under the direction of the bureau chiefs or the Chief of Naval Operations:

Office of Naval Intelligence, Capt. James H. Oliver.

Hydrographic Office, Capt. Thomas Washington.

Target Practice and Engineering Competitions, Capt. Charles P. Plunkett.

Naval Aeronautics, Capt. Mark Bristol.

Naval Observatory, Capt. John A. Hoogewerff.

Division of Naval Militia Affairs, Naval Reserve and Naval Districts, Capt. Frederic B. Bassett, Jr.

Naval Auxiliaries (at Norfolk, Va.), Capt. Andrew T. Long.

Radio Service, Capt. William H. G. Bullard.

Naval Examining and Retiring Boards, Rear-Adm. Thomas B. Howard, president.

Board of Inspection and Survey for Ships, Capt. Henry B. Wilson, president.

During this year the offices of Aids for Operations and for Material were abolished and their duties distributed.

Naval War College.—The Naval War College, located at Newport, R. I., and presided over by Rear-Adm. Austin M. Knight, prepares and works out strategical and tactical problems. Its principal function is to educate officers in the art of war, so that when war is actually declared or impending, our Navy shall be in the hands of officers who, by virtue of this training, are qualified for exercising high command. Without this training, coördination of plans and efforts becomes more a matter of chance than of certainty, thereby lessening the prospect of speedy and successful conclusion of naval operations. The importance and necessity of the War College is becoming more apparent each year. During the summer of 1915, the Atlantic Fleet engaged in two war games, in order not only to exercise the fleet but also to furnish the War College with new data. In addition to the regular staff, 15 to 20 officers attend the courses as students.

Naval Advisory Board.—"Desiring to make available the latent inventive genius of our country to improve the Navy," Secretary Daniels organized during the year a voluntary Naval Advisory Board of civilian inventors and engineers, "in order to utilize to the best advantage of our Navy this mobilization of the talent and genius of our great country." The Board consists of Thomas A. Edison, chairman, and 22 other members, each with a wide reputation as a specialist in his line, drawn from eleven national societies devoted to the promotion of aeronautical, mathematical, chemical, mining, automobile, civil and mechanical engineering. The Board met for the first time on Oct. 6, but beyond forming a preliminary organization, it has not had time as yet to proceed with its work. Its future plans can best be expressed in Mr. Edison's own words:

> We're not inventing and we're not even going to develop inventive ideas submitted. Navy men or civilians will offer ideas to the Navy, the Navy will look into them and the Navy will—if Congress appropriates the money for laboratory and other equipment now needed—develop and try out and adopt inventions of merit. In between, however, the civilian board members, who in addition to their own knowledge have the knowledge of 60,000 or so engineers whom they represent to call upon also, will give expert advice to the Navy whenever the Navy desires it.

Appropriations for 1915-1916.—The Naval Appropriation Act of March 3, 1915, authorized the construction of two battleships, six or more destroyers, two sea-going submarines, 16 coast-defense submarines, and one fuel-oil ship. The total appropriation carried by the Act was $147,538,981.88, of which $45,053,801 was for the increase of the Navy, exclusive of $1,000,000 for aeronautics. The previous session of Congress had authorized the sale of the battleships *Idaho* and *Mississippi* to Greece for the sum of $12,535,275.96 and the construction of the new battleship *California*. Of this amount, $4,635,000 had been expended under the Act for 1914-15, and the total naval expenditures should therefore be reduced by $5,827,410 still available to be expended on the *California*.

The chief items of interest in the Naval Appropriation Act were the following:

Creation of the office of Chief of Naval Operations (see *supra*).

Appropriation of $1,000,000 for aeronautics.

Establishment of an Advisory Aeronautical Committee of 12 members, to be appointed by the President and composed of representatives of the War and Navy Departments, the Weather Bureau, the Bureau of Standards and the Smithsonian Institution, and five other persons.

Authorization to expend $500,000 for building a plant for the manufacture of projectiles.

Repeal of Sec. 9 of the Personnel Act of March 3, 1899, which established the "Plucking Board."

Increase in pay of aviators, 30 per cent. for officers and 50 per cent. for enlisted men.

Establishment of a naval reserve.

Creation of the rank of admiral, to be held temporarily by the officers serving as commanders-in-chief of the Atlantic, Pacific and Asiatic Fleets.

Creation of the rank of vice-admiral, to be held under the same conditions by the officers second in command of these fleets.

Establishment of the warrant ranks of pay clerk and chief pay clerk.

Authorization of the yearly appointment of not more than five ensigns to be assistant naval constructors, the total increase not to exceed 24.

Appropriation for a chain of high-powered radio stations, to be built one each in the Canal Zone, on the California coast, in the Hawaiian Islands, Samoa, Guam, and the Philippine Islands.

Provision for the Marine Corps to receive additional (10 per cent. increase) pay when serving at sea or on foreign service, as provided for officers of the Navy.

Appropriation for the Norfolk and Charleston navy yards in order that these yards may be able to build ships.

Direction of the Secretary of the Navy to submit to the next Congress a report on the building of four warships of the type, power and speed which, in his judgment, based on the knowledge gained from the war in Europe, are best suited for war on the sea; also to report in the light of that war the value and uses in naval warfare of aeroplanes, dirigibles, baloons and submarines.

Regarding new construction, it need only be stated that the Act did not meet the recommendations of the General Board; the necessary scouts and auxiliaries were practically omitted. The creation of the office of Chief of Naval Operations, however, was a step in the proper direction toward preparedness for defense. The appropriation for aeronautics, together with the establishment of the Aero-

nautical Advisory Committee, is bound to have good results. The United States, the home of Langley, the Wright brothers, Curtiss, and others, pioneers in the art of flying, has now fewer air craft enlisted in national defense than any other great power. The importance of aeronautics (the eyes of the naval commander) has been so clearly demonstrated in the present war that the necessity for continued efforts in this direction is apparent.

The section of the Act which abolished the so-called "Plucking Board" authorized the President, subject to confirmation by the Senate, to restore to the active list of the Navy or Marine Corps, within two years of the approval of the Act, any officer retired under the repealed section of the Personnel Act on passing a satisfactory medical and professional examination. Whatever the defects of the abolished system of retirement, it can be stated definitely that Congress erred in abolishing the Naval Retiring Board without providing some substitute to keep open the natural flow of promotion. There is now no promotion in the commissioned personnel of the Navy except by vacancies created by casualty or statutory age-limit retirements.

The naval reserve created by the Act is open to voluntary enlistment of men honorably discharged from the Navy. So far the results have not been satisfactory, but judgment must be withheld until the Act has been given a fair trial. The warranting of pay clerks and chief pay clerks is a most commendable measure which now gives these officers the privileges of other Warrant Officers. The establishment of the temporary grades of admiral and vice-admiral was a long delayed measure finally adopted in order to give American commanders the necessary dignity and authority commensurate with the forces they command when falling in with foreign warships or when acting jointly with foreign vessels, as has happened in Mexico.

The establishment of the chain of high-powered radio stations is a victory in strategy. American naval vessels will henceforth have means of communication with each other and with the Navy Department at all times. Messages will be sent directly and without delay, entirely independently of land or sea telegraph lines, which may or may not be controlled by the enemy.

New Construction.—The bids for the new battleships opened in November were all rejected, being in excess of the prices authorized. Secretary Daniels has since stated that he will have these battleships constructed one each at the Philadelphia and Mare Island Navy Yards. Details of the new submarines will probably not be published. The new destroyers for which contracts were awarded in October are of the following general characteristics: length, 315 ft.; beam, 30 ft. 7 in.; draft, 8 ft.; displacement, 1,125 tons; speed, 30 knots; armament, four 4-in. guns, two anti-aircraft guns, and four triple torpedo tubes. They will be propelled by turbines and have a battery of oil-fired, water-tube boilers. An innovation in the propulsion of battleships is the installation of electric drive on the *California*, a system successfully tried on the collier *Jupiter* (*A. Y. B.*, 1914, p. 313).

The table on the opposite page gives the tonnage, method of propulsion and percentage of completion of the vessels now building and authorized for the U. S. Navy. The speeds of the battleships building are 20.5-21 knots, of the destroyers, 29.5-30 knots, and of the coast-defense submarines, 13-14 knots (surface).

Very little is known regarding new naval construction abroad. The European War may bring out new types of vessels and it may demonstrate fallacies in types previously built, but it can be stated that nothing has yet occurred to prove that the battleship does not rule the seas. The control of the seas is held by Great Britain because she possesses the more powerful battle fleet. The war has demonstrated several facts or axioms which it would be well for the United States to heed: (1) Submarines notwithstanding, naval power rests with the battleships. (2) The battle-cruiser type is a necessary adjunct to the battleship fleet. (3) Very fast scout cruisers are vital necessities. (4) Numerous sea-going submarines, i. e.,

VESSELS, BUILDING AND AUTHORIZED, U. S. NAVY.

	Tonnage	Power[1]	Per Cent. Completed, Oct. 1
Battleships			
Nevada	27,500	C. turb.	96.4
Oklahoma	27,500	Recip. eng.	98.1
Pennsylvania	31,400	C. turb., grd.	88.2
Arizona	31,400	P. turb., grd.	71.7
California	32,000	Elect. drive	....
Mississippi	32,000	C. turb., grd.	30.4
Idaho	32,000	P. turb., grd.	41.6
———	Appropriation, 1915–16 To be built at Govt. Yards.		
Destroyers			
Tucker	1,090	C. turb., grd.	84.5
Conyngham	1,090	P. turb., grd.	85.8
Porter	1,090	P. turb., grd.	84.7
Jacob Jones	1,150	P. turb., grd.	90.4
Wainwright	1,150	P. turb., grd.	89.8
———	1,110	C. turb., grd.	56.8
———	1,110	C. turb., grd.	52.0
———	1,110	P. turb., grd.	52.1
———	1,110	P. turb., grd.	46.0
———	1,110	P. turb., grd.	29.9
———	1,110	P. turb., grd.	8.5
———	1,125	Appropriation, 1915–16 Contracts awarded Oct. 19, 1915	
———	1,125		
———	1,125		
———	1,125		
———	1,125		
———	1,125		
Destroyer Tender			
Melville	7,150	P. turb., grd.	99.8
Fuel Ships			
Maumee	14,500	Diesel eng.	96.2
Cuyama	.....	Recip. eng.	....
Supply Ships and Transports			
Supply Ship No. 1	8,500	Recip. eng.	26.3
Transport No. 1	10,000	Recip. eng.	33.9

	Tonnage	Power[1]	Per Cent. Completed, Oct. 1
Submarines			
G–2		Diesel	89.7
G–3		Diesel	88.6
L–1		Diesel	98.9
L–2		Diesel	98.4
L–3		Diesel	98.1
L–4		Diesel	98.1
L–5		Diesel	79.6
L–6		Diesel	68.5
L–7		Diesel	66.0
M–1		Diesel	87.4
L–8		Diesel	57.2
L–9		Diesel	80.0
L–10		Diesel	79.5
L–11		Diesel	74.8
Schley[2]		.....	....
N–1		Diesel	23.8
N–2		Diesel	23.8
N–3		Diesel	23.8
N–4		Diesel	38.3
N–5		Diesel	37.2
N–6		Diesel	35.4
N–7		Diesel	35.4
Sea-going Submarine		Appropriation, 1915–16 Contracts not awarded (20-25 knots surface speed).	
Sea-going Submarine			
———		Appropriation, 1915–16 Contracts awarded Oct. 19, 1915	
Submarine Tender			
Bushnell	3,580	P. turb., grd.	97.9

[1] Reciprocating steam engines; Curtiss or Parsons steam turbines, geared or ungeared; electric drive; or Diesel oil engines. [2] Sea-going submarine, contract not awarded (20 knots surface speed).

capable of cruising with the fleet, must be built. (5) Properly organized auxiliary service (coal, oil and ammunition supply ships, transports, hospital ships, etc.) must be provided. (6) The reserves of munitions must be larger than was generally supposed. (7) The organization of all the manufacturing facilities for the supply of munitions of all sorts must be thoroughly planned before war is declared. When the war ends, we may have more data in regard to technical details, but these axioms will be found to be immutable. (See also IV, *The European War.*)

The table on the following page shows the characteristics of typical vessels of the battleship and battle-cruiser classes in the leading navies.

The Fleet.—The Navy afloat consists of three active fleets and two reserve fleets, divided as follows:

Atlantic Fleet, Adm. Frank F. Fletcher, Commander-in-Chief:

(1) *Battleship Squadron,* Vice-Adm. Henry T. Mayo: four divisions, a total of 19 battleships.

(2) *Cruiser Squadron,* Rear-Adm. William B. Caperton: four armored cruisers, one cruiser, two old battleships, six gunboats, and one tender.

(3) *Torpedo Flotilla,* Rear-Adm. Albert Gleaves: one cruiser, one tender and 24 destroyers.

The Reserve Torpedo Flotilla consists of one tender and 11 destroyers.

CHARACTERISTICS OF LATEST TYPES OF BATTLESHIPS AND BATTLE CRUISERS

(No Data Subsequent to Outbreak of the European War)

BATTLESHIPS

	Great Britain		Germany		France		Japan		Russia		United States	
	Royal Oak	*Queen Elizabeth*	*Ersatz Worth*	*König*	*Tourville*	*Flandre*	*Fuso*	*Settsu*	*Gangut*	*Imperatritsa Maria*	*California*	*Pennsylvania*
Number of ships in class	8	6	4	4	4	5	4	2	4	3	3	2
Displacement, tons	24,500	27,500	abt.29,000	25,293	29,500	24,800	abt. 30,000	20,800	23,000	22,500	32,000	31,400
Speed, knots	22.5	25.0	.....	20.5	.....	21.0	22.0	20.5	23.0	21.0	21.0	21.0
Length over all, feet	600	650	.....	573.2	623	623	.....	480	590.5	551.2	624	624
Beam, feet	abt. 90	92	.....	96.8	.....	91.8	.....	86	87	90	97.4	97.4
Draft, feet	abt. 27	27.5	.....	27.2	.....	.....	.....	28	27.2	27.5	30	30
Complement	abt. 750	750	.....	1,150	.....	abt. 1,110	.....	960	abt. 1,000	abt. 1,000	1,056	1,056
Date launched	Nov. 19, '14	Nov. 26, '13	prob. 1914	Mar. 1, '13	(1)	Oct. 20, '14	Mar. 28, '14	Mar. 30, '11	1911	1913	Oct., 1915[2]	Mar. 16, '15
Armament[3]	8–15″, 16–6″, 12–3″	8–15″, 16–6″, 12–3″, 5–21″ t.t.	8–15″, 16–5″.9, 14–3″.4	10–12″, 14–5″.9, 12–3″.4, 5 t.t.	16–13″.4, 28–5″.5,	12–13″.4, 24–5″.5, 4–3 pdr., 6–18″ t.t.	12–14″, 16–6″	12–12″, 10–6″, 10–4″.7, 4–3″, 5–18″ t.t.	12–12″, 16–4″.7, 4–3 pdr., 4–18″ t.t.	12–12″, 20–4″.7, 4–9 pdr., 4–3 pdr., 4–8″ t.t.	12–14″, 4–3 pdr., 2–1 pdr., 4–21″ t.t.	12–14″, 22–5″, 4–3 pdr., 2–1 pdr., 4–21″ t.t.

[1] Not launched. [2] Keel laid. [3] t. t., torpedo tubes.

BATTLE CRUISERS

	Great Britain		Germany		France	Japan	Russia	Greece	United States
	Tiger	*Lion*	*Derfflinger*	*Seydlitz*		*Kongo*	*Borodino*	*Salamis*[1]	
Total number of battle cruisers for each nation	At least 9 in commission		At least 7 building or completed when war began[2]		No battle cruisers building when war began	8	4	1	No battle cruisers building or authorized
Displacement, tons	30,000	26,350	28,000	24,605		27,500	32,500	19,193	
Speed, knots	30	28.5	30	25.5		28	26.5	23	
Length over all, feet	700	700	718	656.2		704	750	570.9	
Beam, feet	90	88.5	98	93.5		92	100	82	
Draft, feet	.....	28	27	26.9		27.5	....	25.3	
Complement	.....	950	.....	1,108		....	....	....	
Date launched	Dec. 15, '13	Aug. 6, '10	July 1, '13	Mar. 30, '12		May 18, '12	Dec. 19, '12[3]	1913[3]	
Armament	8–13.5″ 12–6″, 2–21″ t.t.	8–13.5″, 16–4″, 5–21″ t.t.	8–12″, 12–5″.9, (–)–3″.4	10–11″, 12–5″.9, 12–3″.4, 4 t.t.		8–14″, 16–6″, 8–21″ t.t.	9–14″, 20–4.7″	8–14″, 12–6″, 12–3″, 5–19.5″ t. t.	

[1] Building in Germany and will probably be taken over by Germany during the war.

[2] Battle cruiser *Moltke* sold to Turkey at commencement of hostilities reducing the 7 to 6.

[3] Laid down.

(4) *Submarine Flotilla*, Rear-Adm. Albert W. Grant: one cruiser, seven tenders, two destroyers, and 17 submarines.
(5) *Mining and Mine Sweeping Division*, Comdr. Reginald R. Belknap: one mine depot ship, one mine planter, one gunboat, and four tugs.
(6) *Auxiliary Division*, Rear-Adm. Charles F. Pond: one repair ship, two supply ships, one fuel ship, one ammunition ship, and one hospital ship.

Atlantic Reserve Fleet: Rear-Adm. James M. Helm, Commander-in-Chief.
Six battleships.

Pacific Fleet, Adm. Cameron McR. Winslow, Commander-in-Chief:
(1) Two armored cruisers, five third-class cruisers, and two gunboats.
(2) Torpedo flotilla of one tender and nine destroyers, four of which are in reserve.
(3) Submarine flotilla of two tenders and ten submarines.
(4) Auxiliary division of one supply ship and a tug.

Pacific Reserve Fleet, Rear-Adm. William F. Fullam, Commander-in-Chief:
Four armored cruisers, two first-class cruisers, and one third-class cruiser.

Asiatic Fleet, Adm. Albert G. Winterhalter, Commander-in-Chief:
(1) One first-class cruiser, two third-class cruisers, and nine gunboats.
(2) Torpedo flotilla of one tender and five destroyers.
(3) Submarine flotilla of two tenders and nine submarines.
(4) Auxiliary division of one monitor, in reserve, and two tugs.

The following vessels are unassigned to any fleet: two battleships, two first-class cruisers, five third-class cruisers, one monitor, ten gunboats, five ex-colliers, one supply ship, four destroyers, nine torpedo boats, one submarine, one transport, and three tugs. The following new vessels are fitting out: three battleships, one destroyer tender, one submarine tender, five destroyers, and nine submarines.

All these fleets cruise, hold drills and exercises, target practices and steaming competitions. In the summer of 1915 two war games were worked out by the Atlantic Fleet. In each game the defender was defeated, due principally to the lack of speedy scouts or a wing of battle cruisers. The Atlantic Cruiser Squadron is mainly engaged in protecting American interests in Haiti and Mexico, while the Pacific Fleet has performed patrol duty off the western Mexican coast.

During the year the whole nation mourned the loss of the submarine *F-4* and her crew. This vessel, while engaged in target practice off the entrance to Honolulu harbor on March 25, failed to come to the surface. She was raised and towed into dry dock on Aug. 29, but the cause of the accident has not yet been made public. The *F-4* sank in about 305 ft. of water, and the daring work of the Navy divers who descended to this hitherto unprecedented depth marks a new epoch in diving. The American Navy has lost by accident only the submarine *F-4*, while foreign navies have had a total of 29 such accidents.

Personnel. — The following table shows the personnel of the Navy, Marine Corps, and Naval Militia on July 1, 1915:

	Navy	Naval Militia
Sea-Going		
Admiral of the Navy	1	0
Admirals[1]	0	0
Vice-admirals[2]	0	0
Rear-admirals[3]	25	0
Commodores	0	1
Captains and commanders[4]	211	25
Other line officers[5]	1,778	442
Medical officers[6]	383	62
Pay officers	221	39
Naval constructors	77	0
Chaplains	27	4
Warrant officers	1,012	31
Enlisted men	52,444	7,629
Marine Corps: Officers	344	1
Enlisted men	9,965	77
Total	66,488	8,311
Non-Sea-Going		
Professors of mathematics	17	0
Civil engineers	40	1
Midshipmen at Naval Academy	876	0
Total	933	1

[1] Three commanders-in-chief of fleets temporarily hold this rank. [2] Three seconds-in-command of fleets temporarily hold this rank. [3] Includes the above six and also seven extra numbers. [4] Includes 29 extra numbers. [5] Includes six extra numbers. [6] Includes 32 in Dental Corps.

The Navy and the Marine Corps are recruited to full strength. The standard for enlistment is getting higher, about one acceptance to six or seven applications being the average recruitment. In his estimates for

1916-1917, the Secretary of the Navy has asked for an increase of 10,000 seamen, 1,500 marines, 76 marine officers (54 commissioned), and 250 midshipmen at the Naval Academy.

The two lower grades of officers comprise 60 per cent. of the numerical strength of the line, showing how "bottom-heavy" the line really is. There is now no flow of promotion other than that due to retirements for age or casualties. Under present conditions, an ensign graduating from the Naval Academy will not reach the grade of lieutenant until about ten years before he retires for age. This condition is becoming worse each year. The proposed increase of midshipmen at the Naval Academy will tend to increase the stagnation.

The percentage of naval militia to active personnel in the United States is about 12. Before the outbreak of the European War the proportion was 43 per cent. in England, 104 per cent. in Germany, 120 per cent. in Austria, and 149 per cent. in France. When war was declared all these nations called in their trained reserves. England, however, with her 43 per cent. had to enlist 100,000 more men. In case of war we should have to call in about 35,000 untrained men. It is understood that the Assistant Secretary of the Navy is preparing a bill calling for 50,000 reserves, and various societies, such as the Navy League, have volunteered their services to assist the Navy Department in the formation of this reserve force.

The Marine Corps.—The principal functions of the Marine Corps is expeditionary and advance base work. In times of war the Marine Corps would occupy and defend "advance bases," that is, harbors near the scene of operations where the fleet could be victualled, repaired and fueled. In time of peace, the Corps is called upon to suppress uprisings, such as the Haitian revolution, and perform patrol duty in general. In this latter duty they have proved their efficiency in every part of the world. On Oct. 9, 1915, the Marine Corps consisted of 344 officers and 9,978 enlisted men, of whom about one-half were serving in the United States, and the remainder performing duty in China, Guam, Guantanamo (Cuba), Honolulu, Nicaragua, the Philippines, Haiti, and aboard vessels of the fleets. An Advance Base School was organized at Philadelphia during the year for the purpose of gathering men and equipment and training the personnel for advance base work. Ten graduates of the 1915 class at the Naval Academy requested and received commissions in the Marine Corps.

Three companies of marines were sent to Guaymas, Mexico, in June, to quell disturbances. At the outbreak of the troubles in Haiti in July (see IV, *Haiti*), marines were landed from the cruiser *Washington*. Reinforcements being needed, the Department wired the Advance Base School to send 500 men. Within 24 hours these men, completely equipped, had sailed on the battleship *Connecticut*. On Aug. 10 and 31 further reinforcements were sent. The brigade in Haiti, commanded by Colonel Waller, consists of three companies of artillery, equipped with 3-in. and 4.7-in. guns, one signal company, one company of engineers, one searchlight company, four companies organized as 5-in. naval-gun batteries, one aero-defense company, and eight companies of infantry. During the operations two men were killed and ten wounded. The service of the Marine Corps in the restoration and maintenance of good order in Haiti has been conspicuously efficient.

The Naval Militia.—In October, 22 states, Hawaii and the District of Columbia were represented in the Naval Militia, Texas and Hawaii being added to the list during the year. Every state bordering on salt water, the Great Lakes, or navigable rivers is being urged to form an organization. The appropriation provided for 1915-1916 was $250,000, and, in addition, a permanent annual appropriation of $200,000 is allowed by the Naval Militia Act of 1914 (*A. Y. B.*, 1914, p. 310). In accordance with the recommendations of the Militia Board, General Orders 150 and 153 were promulgated during the year, standardizing all Militia organizations to the most minute detail. Naval officers are now assigned as instructor-inspectors of the Militia. It is hoped that eventually one officer

can be assigned to each state with no additional duties. In the spring of 1915, all the organizations were inspected and passed successfully except one division (one-fourth of a state organization) which was placed on a year's probation.

Thirty-two vessels are loaned to the Naval Militia for training purposes. As these are old and practically obsolete gunboats, efforts are being made to have reserve battleships assigned to the Militia. These battleships are expected to have four officers of the Navy and 40 per cent. Navy crews aboard, which would result in better upkeep of vessels and more efficient instruction for the Militia, and, in case of war, each battleship would be promptly manned by crews familiar with their specific duties. Very successful summer cruises of the Militia were made on their own vessels and on the battleships *Kentucky* and *Kearsage*, the cruiser *Albany* and the destroyers of the Pacific Reserve Flotilla. Rivalry in target practice is very keen. The Illinois organization won the coveted state trophy as the most efficient in gunnery, while the gunnery division competition was won by the First Division, Second Battalion of Ohio. Popular interest in the Naval Militia is increasing rapidly, the attractions of the cruises and the actual participation in target practice being powerful incentives to the patriotic youth of the nation.

Aeronautics. — Comdr. Henry C. Mustin is in charge of the Aeronautical Station at Pensacola, where the old Navy Yard is being made over to suit the needs of an aeronautical base. Assisting him are 33 officers and about 135 enlisted men. Of the officers, 17 are qualified air pilots, the remainder being aviation students. Heretofore, due to lack of personnel, but ten officers per year (eight Navy, two Marine Corps) were assigned to aviation duties. Beginning in October, 1915, there will be detailed for instruction in aeronautics 40 officers per year.

At present the Aviation Corps has at its disposal 14 seaplanes, the most powerful being only of about 82 h. p. Under construction are 16 seaplanes, the most powerful being of 140 h. p. It is interesting to note that, according to the press, the latest type of German machines are to have two motors of 350 h. p. each. The American planes cost between $10,000 and $15,000 each. A baby dirigible for experimental purposes, costing about $45,000, is now being built and will be our sole representative in the line of dirigibles.

The armored cruiser *North Carolina* is equipped as a training ship for aviation and will be used more extensively later on when sea-scouting becomes practicable. The principal function of naval aeronautics is scouting at sea, but this cannot be attempted until sufficient funds are forthcoming for the purchase of reliable motors. A newly designed catapult for launching seaplanes from the deck of a ship was recently tried with much success, and a motor testing plant is in process of erection at the Washington Navy Yard. During the year the Aviation Corps has been engaged in training officers and men, conducting experiments in conjunction with the *North Carolina*, bomb-dropping, etc. Lieutenant Bellinger assisted the Army at Fort Monroe by spotting successfully from an aeroplane for target practice. But one serious accident occurred during the past year, resulting in the death of Lieutenant Stolz.

The estimates for 1916-1917 contain recommendations for the expenditure of $2,000,000 for aeronautics. The impression prevails that this entire sum will be spent for the purchase of new machines. When the expenses for upkeep and improvements of the station, for experiments and developments generally are made, there will remain only one-fourth or one-fifth of the original appropriation available for the purchase of new seaplanes and dirigibles.

Estimates for 1916-17.—The entire country apparently now demands increased provision for national defense. No party had heretofore provided for a continuous programme or policy, but it seems that at last the country is to have such a policy, a system business-like, progressive and, it is hoped, adequate. On July 21, 1915, President Wilson addressed a letter to the Secretary of the Navy directing

him to "get the best minds in the Department to work on the subject" of an adequate defense programme, which "should be a programme for a consistent and progressive development of this great defensive arm of the nation, and should be of such a kind as to commend itself to every patriotic and practical man." Secretary Daniels, after conferences with officers in the Department and later with the President, issued to the press on Oct. 19 his estimates, not only for 1916-1917, but also for each succeeding year up to 1921. The following table shows the number and type of ships asked to be authorized each year and the sum of money required annually, making up a grand total for the five years of $502,482,214:

	1917	1918	1919	1920	1921
Dreadnoughts: Number	2	2	2	2	2
Cost	$15,560,000	$26,580,000	$37,600,000	$37,600,000	$37,600,000
Battle cruisers: Number	2	None	1	2	1
Cost	11,158,000	11,921,000	17,500,000	17,118,500	23,460,500
Scout cruisers: Number	3	1	2	2	2
Cost	6,900,000	6,350,000	10,000,000	8,650,000	10,000,000
Destroyers: Number	15	10	5	10	10
Cost	10,500,000	16,900,000	10,100,000	10,300,000	13,600,000
Fleet submarines: Number	5	4	2	2	2
Cost	4,425,000	5,577,500	5,437,500	4,215,000	3,400,000
Coast submarines: Number	25	15	15	15	15
Cost	5,750,000	13,950,000	9,750,000	9,750,000	9,750,000
Gunboats: Number	2	1	None	.....	1
Cost	760,000	1,140,000	380,000	.....	380,000
Hospital ships: Number	1	None	.....	.....	.....
Cost	1,250,000	1,200,000	.....	.....	.....
Ammunition ships: Number	.....	.....	.....	1	1
Cost	.....	.....	.....	799,887	1,766,000
Fuel oil ships: Number	1	None	.....	1	None
Cost	700,000	655,250	.....	700,000	655,250
Repair ship: Number	.....	.....	.....	.....	1
Cost	.....	.....	.....	.....	1,175,000
Total for ships	$57,003,000	$84,273,750	$90,767,500	$89,133,087	$101,786,750
For completion of ships previously authorized	28,369,127	20,149,000			
Two year totals	$85,372,127	$104,422,750			
Aviation	2,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Reserve of munitions	8,000,000	5,000,000	5,000,000	5,000,000	2,000,000
Grand Total	$95,372,127	$110,422,750	$96,767,500	$95,133,087	$104,786,750

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XIII. ECONOMIC CONDITIONS AND THE CONDUCT OF BUSINESS

S. S. Huebner

BUSINESS CONDITIONS IN 1915

A Year of Business Revival.—Nearly all branches of industry and finance show a marked improvement during 1915 as compared with the depression of the two preceding years. As a result of the stupendous European War the demands of Europe upon us for foodstuffs, munitions and supplies of all kinds have been so great as to overtax the productive capacity of many of our leading industries, and in numerous instances to lead to a material extension of manufacturing facilities (see XVIII, *Iron and Steel;* XIX, *Manufactures;* and XXIV, *Industrial Chemistry*). Industries favored directly by large foreign orders have, in turn, been obliged to purchase equipment and raw materials on a huge scale (see XVIII, *Iron and Steel*). Business is largely a unit, and the stimulating influence of large war orders has affected, directly or indirectly, a very large number of American industries, and has brought about a sudden and violent business revival. Judging from the present tone of financial and trade journals, optimism has supplanted pessimism and little of the uncertainty which characterized the years 1914 and 1913 seems to be manifesting itself at present. Business men, instead of marking time while waiting developments as they did during the two preceding years, now seem to show a readiness to take the initiative in purchasing for the future or otherwise extending their business operations. In fact, in a few fields, especially in the security market, the forward movement has assumed such dangerous extension as to give unmistakable evidence of speculative excesses and to furnish just cause for alarm.

As was the case in 1914, the nation has been favored with a most bountiful harvest, the total crop exceeding by about one-tenth even the excellent crop of the preceding year. Bank clearings, an excellent index of general business conditions, average at the end of 1915 approximately 50 per cent. greater than in 1914. In the iron and steel business the leading plants, instead of operating at about only 40 to 45 per cent. of capacity, as was the case in the latter part of 1914, are now reported as running at full capacity. Moreover, the prices for iron, steel, copper and most other metals have had a very substantial increase, and exhibit a rising tendency as contrasted with a declining one during nearly all of 1914. Foreign exports are abnormally large and exceed all previous records. In fact, the net merchandise export balance for the fiscal year 1915 considerably exceeded the billion dollar mark, an amount larger than the entire merchandise exports from the United States for as recent a year as 1896-97 (see XX, *External Commerce*). Building operations, likewise, have during the last few months shown a substantial increase.

In brief, practically all the leading barometers of trade (to be discussed separately in the later pages) indicate decided improvement. Fortunately this improvement has been accompanied by a strong banking position (see XIV, *Banking and Currency*). Surplus reserves even now stand very high, and short-time and call-loan rates have been low throughout the year. This favorable banking situation has, in turn, had a marked influence on the condition of

the security market. In 1914 this market, even before the closing of the exchanges on July 30, was characterized by unprecedented dullness. The average price of representative stocks also showed a material decline even when compared with the low figures of 1913, thus showing that the year was one of liquidation, not accumulation. As contrasted with these conditions, the year 1915 makes a very favorable showing and furnishes abundant evidence that the stock market has been discounting a period of prosperity. During the first seven months of the year the sales of shares on the New York Stock Exchange exceeded those of the corresponding months of 1914 by nearly 70 per cent. The average price of 27 representative stocks, to be discussed later, increased over 27 per cent. during the year ending Oct. 31; while in the case of shares of corporations benefiting directly from large war orders the rise has been sensational, amounting in numerous instances to over 200 and 300 per cent.

Statistics.—In the tables on the following pages is presented a summary of business conditions in 1915 in contrast with those of 1914, as shown by those indices which are generally accepted as the truest barometers of industry, trade and finance. The tables relating to stock-market activity, including summaries of "Shares of Stocks and Bonds Sold," "Average Security Prices," and "New Securities Listed," indicate the activity or lack of activity during the year in the security market and the condition of the investment demand. The tables relating to "Loans and Deposits of the New York Clearing House Banks" and "Domestic and Foreign Money Rates" furnish an idea of the conditions surrounding the money market during 1915, while the tables on "Bank Clearings," "Foreign Trade," "Cereal Production," "Idle Cars," "Production of Iron and Copper," "Building Construction," and "Business Failures" serve to furnish a view of the year's activity in mercantile and manufacturing lines. For purposes of comparison, the figures are given by months for the years 1914 and 1915, and to make possible a further comparison, the totals for the several items, wherever possible, are given also for 1913 and 1912.[1]

AGRICULTURE

Crop Production.—The grain-crop statistics of the United States for 1915, as indicated by the October estimates of the Department of Agriculture, present an even more favorable showing than the excellent crop returns described in the last issue of the YEAR BOOK (p. 319). Considering the five leading cereals, the estimate yield for 1915, as indicated by the accompanying table, shows a total of 5,404,000,000 bus., an increase of 459,000,000 bus. over 1914, or over nine per cent. It should be recalled that the October estimates for 1914 exceeded those for 1913 by nearly 10 per cent.

The year's wheat crop is the largest ever harvested, the yield amounting to 1,002,029,000 bus. as compared with 892,000,000 bus. in 1914, an increase, compared with the 1914 and 1913 crops, of over 12 and 31 per cent. respectively. As was the case in 1914 and 1913 this splendid showing was occasioned partly by the record yield of winter wheat. It should be observed, however, that the high prices prevailing during 1914 occasioned a material increase in the acreage devoted to wheat growing, the acreage for 1915 exceeding that of 1914 by 11.6 per cent. for winter wheat and 9.8 per cent. for spring wheat. Corn, the nation's leading crop, shows an increase of 350,000,000 bus. over 1914, or over 13 per cent. The yield, exceeded by that of only one previous year, viz., 1912 (3,125,000,000 bus.), compares very favorably with the average for the last ten years.

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[1] The author is indebted for many of the statistics presented in the following tables to the monthly compilations prepared from authentic sources by R. W. Babson, and issued periodically in "Babson's Desk Sheet of Tables on Barometric Figures for Business Conditions." In the collection of data much assistance has been obtained also from the excellent compilations and reviews published periodically by the *Commercial and Financial Chronicle* and the *Journal of Commerce and Financial Bulletin.*

CEREAL PRODUCTION
(000,000 omitted)

	1915[1]	1914, Final	1913, Final	1912, Final	1911, Final	Previous Record	
Winter wheat, bushels	656	685	523	400	431	685	(1914)
Spring wheat, bushels	345	206	240	330	191	330	(1912)
Corn, bushels	3,026	2,673	2,447	3,125	2,531	3,125	(1912)
Oats, bushels	1,517	1,141	1,122	1,418	922	1,418	(1912)
Barley, bushels	194	195	178	224	160	224	(1912)
Rye, bushels	44	43	41	36	33	43	(1914)
Total	5,782	4,943	4,551	5,533	4,268	5,825	

[1] October estimate; the December estimate is given under XVII, *Statistics of Agriculture.*

All the remaining important agricultural crops for 1915 present a favorable showing as compared with 1914. The estimated yield of oats is placed at 1,517,000,000 bus., an increase of 33 per cent. over 1914 and representing the record crop up to date. The barley yield is estimated at 194,000,000 bus., or only 7,000,000 bus. less than the 1914 crop, which showed an increase of 10.7 per cent. over 1913. For rye the estimated yield is placed at 44,000,000 bus., or slightly in excess of the 1914 crop; for potatoes, 433,000,000 bus., compared with 462,000,000 bus.; for tobacco, 1,098,804,000 lb., as compared with 1,034,679,000 lb.; for hay, 101,000,000 tons, as compared with 88,000,000 tons; for flaxseed, 17,655,000 bus., as compared with 15,559,000 bus.; and for rice 26,251,000 bus., as compared with 23,649,000 bus. Only in the case of apples does the year's estimated yield show a considerable falling off as compared with 1914, the respective yields of this crop amounting to 71,632,000 bbls. in 1915 and 84,400,000 bbls. in 1914. (See also XVII, *Agriculture*, and *Horticulture.*)

Cotton Production.—The Government's October statement placed the condition of the cotton crop at 60.8 per cent., as compared with 73.5 per cent. for 1914, 64.1 per cent. for 1913, and 68.5 per cent. for the ten-year average. The estimated yield for 1915 is placed at only 10,950,000 bales, or nearly 32 per cent. less than the 1914 crop of 16,135,000 bales. The unusual smallness of the crop is due chiefly to the unusual deterioration of the crop brought about by extremes of weather conditions (periods of excessive rainfall, cold weather and draughts) which have prevailed throughout the season in most of the cotton belt. The lack of fertilizer and the poor quality of much that was used is also assigned as an unfavorable factor in the eastern cotton belt. In addition to these two factors there should also be mentioned the smaller acreage, amounting to only 84.3 per cent. of the 1914 acreage, which was occasioned by the abnormally low prices for cotton as a result of the severe depression in the industry brought about in 1914 by the war in Europe. (See also XVII, *Agriculture.*)

Prices of Staple Agricultural Products.—Owing to the excellent yields, current prices of agricultural products are somewhat lower than those prevailing in 1914, but the decline, as is indicated in the following table of prices on Oct. 1 (for December prices see XVII, *Statistics of Agriculture*), is in most instances not serious, especially when it is remembered that the price level of 1914, as a result of the war, was unusually high:

	1915	1914
Wheat	$0.909	$0.935
Corn	0.705	0.782
Oats	0.345	0.433
Barley	0.468	0.518
Rye	0.817	0.790
Potatoes	0.487	0.647
Flaxseed	1.481	1.274
Apples (bbl.)	1.740	1.848
Hay (ton)	10.690	11.770

At the close of September, Chicago December wheat was quoted at $0.94⅞, compared with $1.06½ a year ago and a previous September high of $1.04¼ in 1910. December corn was quoted at $0.66¾, compared with $0.69¼ a year ago and a previous September high of $0.65 in 1911. The price movement has been

particularly favorable to cotton. As explained in the last issue (p. 320) the war, although helping most lines of agriculture, was the cause of the severest depression in the cotton industry, prices at one time falling to the very low figure of 6-6½ cents. This unusual decline in prices was traceable to the abnormal decrease in foreign demand and the closing of the New York and Liverpool Cotton exchanges, the American market for a number of months being practically disorganized. Following the reopening of the exchanges, however, prices have shown a gradual rising tendency, and the movement has been helped partly by the small acreage devoted to cotton in 1915 and partly to the poor condition of the crop. On Oct. 1 the price for cotton was 11.2 cents, as compared with only 7.8 cents on the corresponding date in 1914; on Dec. 1 the price remained at 11.2 cents, compared with 6.8 cents a year before.

IRON AND STEEL TRADE

Iron Production.—The decline in the production of pig iron so noticeable in 1914 (*A. Y. B.*, 1914, p. 321) and attributed chiefly to reduced building operations and the failure of the railroads to make extensions and renewals, continued during the first two months of 1915. By March, however, the large increase in orders for munitions of war began to make itself felt in the business. For March the production of pig iron amounted to 2,064,000 tons. Each month thereafter shows a substantial increase over its predecessor. For September the production reached 2,853,000 tons, an increase of 38 per cent. over the figure for March, 1915, and 50 per cent. in excess of the production for September, 1914. The September production of 2,853,000 tons is at the rate of 34 million tons per annum, a new high record and one which represents practically the full capacity of existing plants. In the meantime prices also have had a substantial rise. At the middle of November the price of pig iron, No. 2 Southern at Cincinnati, was $15.90, compared with $12.90 in 1914 and a previous November high average of $23.38 in 1906. (See also XVIII, *Iron and Steel;* and XIX, *Manufactures.*)

The Steel Trade.—In October, 1914, steel mills in Pittsburgh were reported to be operating only 40 to 45 per cent. of capacity, while the Chicago mills were said to be operating only slightly above one-third of their capacity. The record of unfilled orders of the U. S. Steel Corporation, usually considered an excellent index of trade, showed an average of only 4,306,846 tons for the first nine months of 1914, compared with 6,410,005 tons for the corresponding period in 1913, a decrease of nearly 33 per cent. These conditions have changed to a remarkable extent during 1915, and the phenomenal improvement is clearly indicated by the October statement of unfilled contracts issued by the Steel Corporation. Unfilled orders on the books of the company on Oct. 31 amounted to 6,165,452 tons, a gain of 847,834 tons for the month. The total, as reported by the press, was 2,700,000 tons greater than a year before, and was larger than in any month since May, 1913. According to the press, present figures clearly indicate that the steel trade is experiencing one of the greatest booms in its history. Moreover, all accounts show that the industry is thriving on improving prices as well as from heavy orders. In referring to the Steel Corporation's statement of unfilled tonnage at the end of October the *Iron Age* makes the following comments on the present situation:

> The Steel Corporation's statement that its unfilled orders increased 847,000 tons last month gave the first definite measure of the steel trade's sensational leap forward in October. This is an unparalleled record, but is thus only in keeping with all other developments in the current market.
>
> Price advances have had no effect of curtailing demand; it is, in fact, heavier now than at any other stage in the present remarkable movement.
>
> In the flood of orders in October domestic business figured to a larger extent than in many months. Exports in September products reported by weight were 381,000 tons, against 401,000 tons in August. Values of all iron and steel exports, including machinery, were $38,400,000, against $37,727,000 in August. The scarcity of vessel room may have prevented the increase looked for in Sep-

tember, but the statistics raise the question whether the war export movement has reached its height.

The scarcity of certain forms of material is more serious than the advances in price. Output of some manufacturing consumers is likely to be curtailed because steel cannot be had.

PRODUCTION OF IRON AND COPPER

	Pig Iron		Copper			
	Production, Tons		Production, Pounds		Visible Supply, Pounds	
	1914	1915	1914	1915	1914	1915
January	1,885,000	1,601,000	132,000,000	85,000,000[1]	91,438,000	173,641,000
February	1,888,000	1,675,000	123,000,000	90,000,000[1]	87,296,000	145,000,000
March	2,348,000	2,064,000	146,000,000	95,000,000[1]	78,371,000	168,000,000
April	2,270,000	2,116,000	152,000,000	110,000,000[1]	64,609,000	150,000,000
May	2,093,000	2,263,000	142,000,000	115,000,000[1]	70,337,000	120,000,000
June	1,918,000	2,381,000	141,000,000	125,000,000[1]	84,343,000	100,000,000
July	1,958,000	2,563,000	145,000,000[1]	130,000,000[1]	106,111,000	118,000,000
August	1,995,000	2,779,000	130,000,000[1]	135,000,000[1]	114,011,000	122,000,000
September	1,883,000	2,853,000	120,000,000[1]	140,000,000[1]	159,811,000	126,000,000
October	1,778,000	3,125,000	110,000,000[1]	133,000,000	206,311,000	130,000,000
November	1,518,000	3,037,000	80,000,000[1]	133,000,000	238,611,000	.....
December	1,516,000	3,203,000	80,000,000[1]	133,000,000	212,000,000	.....

[1] Estimated.

COPPER TRADE

Last year's account (*A. Y. B.*, 1914, p. 322) showed that the copper trade had suffered an even greater decline during 1914 than the iron and steel business, production of the metal having decreased 92 million pounds during the first nine months as contrasted with the same period in 1913, the visible supply having increased from 29,793,000 lb. in October, 1913, to 140,000,000 lb. in September, 1914, the price of the metal in the meantime having declined 31 per cent., and the average price of 20 representative copper shares having reached the very low figure of 32.9 on July 30, 1914, as compared with 36.9 at the beginning of November, 1913.

With the exception of the amount produced, all of the foregoing features, owing to a greatly enlarged domestic and foreign demand for the metal, show a decided improvement during the year 1915. While the production of the metal during the first nine months of 1915 totals only 1,025,000,000 lb., as compared with 1,231,000,000 lb. during the same period in 1914, it is noteworthy that the visible supply has declined from the unusually high figure of 238,000,000 lb. in November, 1914, to 126,000,000 lb. by the close of September, 1915. In the meantime the price of the metal has had a very material advance, viz., to 18.19 cents for electrolytic copper at New York, compared with 11.35 cents a year ago and a previous November high average of 17.33 cents in 1912. In turn, the increased price for the metal, together with the material decline in the visible supply, has had a very noticeable effect upon the price of leading copper shares. At the middle of November the average price of 20 active and representative copper stocks was $50.4, compared with $32.9 on July 30, 1914, $80 early in 1907, $28.6 late in 1907, and $60.8 in August, 1909.

FOREIGN TRADE

In discussing the country's foreign trade for the fiscal year ended June 30, 1915, we are dealing with an abnormal situation. Wholly as a result of the European War, certain of the belligerent countries have made such demands upon us for supplies and materials necessary for the prosecution of the conflict as to create a most extraordinary balance of trade in our favor, this balance, however, being confined to a comparatively limited number of commodities. Aggregate exports of merchandise for the fiscal year 1914-15 are valued at $2,768,643,532, against $2,364,579,148 in 1913-14 and $2,465,884,149 in 1912-13. Imports, on the other hand, show a material decrease, the total for 1914-15 aggregating only $1,674,220,740, as compared with $1,-

893,925,657 and $1,813,008,234 for the preceding two years. The net balance of exports for the fiscal year 1915 reached $1,094,422,792, against only $470,653,491 in 1913-14 and $652,875,915 in 1912-13. For purposes of comparison it may be stated that the record balance in former years was $666,431,554 in the year 1907-08. It should be added that this abnormal situation has continued during the months following the close of the fiscal year and for the same reasons. Thus, during the first nine months of 1915 the balance of trade rose to the extraordinary figure of $1,227,293,504. Imports during the same nine months, on the other hand, were $108,000,000 under the total for the corresponding period in 1914. In October exports reached the high-water mark of $334,638,578, while imports remained practically stationary at $148,529,620. The best estimates available at the close of the year placed the total exports for 1915 at $3,498,000,000, the imports at $1,775,000,000, and the balance of trade at $1,723,000,000.

Among the important features revealed by a detailed examination of our foreign-trade statistics for the fiscal year 1915, the following deserve special mention:

(1) The phenomenal balance of trade has accrued chiefly from increased exports in a limited number of commodities, some of which had never previously figured to any appreciable extent in our export trade but now suddenly became necessities for the waging of the European conflict. Among the articles in which great gains were made should be mentioned horses and mules, breadstuffs, automobiles, brass, chemicals and drugs, cotton and woolen wearing apparel, barbed wire, explosives, leather and its manufactures, meats, firearms, and zinc. On the other hand, many leading articles that formerly constituted bulwarks of our export trade show a marked falling off. Most prominent in this group are cotton (owing chiefly to the marked decline in price occasioned by the war), agricultural implements, railway cars, coal, copper, fertilizers, builders' hardware, most lines of machinery, steel rails, and mineral oils.

(2) Higher prices played an important part in increasing the total value of our exports. The importance of this factor may be illustrated by a few average prices for leading articles. Thus, the average price of wheat for the fiscal year 1915 was $1.28, as compared with 95.2 cents for the previous year; for corn the average prices were 80.1 cents and 74.7 cents, for oats 58.4 cents and 41 cents, and for flour $5.81 per barrel and $4.60⅝. Exports of breadstuffs, it should be noted, exceeded those of 1913-14 by over $400,000,000.

(3) Imports show a falling off in the majority of articles, especially in those for which an increased demand has been caused by the war or the production of which has been seriously impeded by the wholesale withdrawal of workers. Thus, the importation of chemicals and drugs shows a falling off of about 12 millions and copper and manufactures thereof another 21 millions. Large losses are shown also in fertilizers, tin, cotton manufactures, fibres and manufactures thereof, vegetable oils, and raw silk and silk manufactures. Increases are confined to a comparatively small list, notable examples being India rubber, Egyptian cotton, fresh meats from Argentina, sugar and wool.

(4) There has been an almost complete suspension of direct trade with Germany, Austria-Hungary, Belgium and Russia, and an enormous increase in the exports to other leading European countries. For the twelve months ending June 30, 1915, United States exports to Germany amounted to only $28,863,354, compared with $344,792,276 in the previous fiscal year; while imports from Germany reached only $91,872,711, as against $189,919,136. Direct exports to Austria-Hungary were only $1,240,167, against $22,718,258 for the previous fiscal year, while the imports from that country were only $9,794,418, against $20,110,834. Belgian commerce has also fallen to small proportions, exports thence being only $20,662,315, against $61,219,894, and imports from $10,222,860, against $41,035,532. Needless to say, however, a considerable indirect

export trade has been carried on with the Teutonic powers through other countries. This becomes apparent when we note that our exports to the Netherlands during the fiscal year 1915 rose from 112 millions to 143 millions, to Norway from 9 millions to 39 millions, to Sweden from 14½ to 78 millions, and to Italy from 74 millions to 184 millions.

On the other hand, exports from the United States to the United Kingdom and France reached enormous figures during the fiscal year. To the former they amounted to 911 millions, against 594 millions in the preceding year, and to the latter to 369 millions, against 159 millions. Imports from these two countries, however, showed a marked falling off, those from England declining from 293 millions to 256 millions, and from France, from 141 millions to 77 millions.

FOREIGN TRADE

	Imports		Exports		Balance of Trade[1]	
	1914	1915	1914	1915	1914	1915
January	$154,742,923	$122,148,317	$204,066,603	$267,879,313	$49,323,680	$145,730,996
February	148,044,776	125,123,391	173,920,145	299,805,869	25,875,369	174,682,478
March	182,555,304	157,982,016	187,499,234	296,611,852	4,943,930	138,571,636
April	173,762,114	160,576,106	162,552,570	294,745,913	−11,209,544	134,169,807
May	164,281,515	142,284,851	161,732,619	274,218,142	−2,548,896	131,933,291
June	157,529,450	157,695,140	157,072,044	268,547,416	−457,406	110,852,276
July	159,677,291	143,244,737	154,138,947	268,974,610	−5,538,344	125,729,873
August	129,767,890	141,804,202	110,367,494	261,025,230	−19,400,396	120,246,133
September	139,710,611	151,236,026	156,052,333	300,676,822	16,341,722	146,343,919
October	138,080,520	149,172,729	194,711,170	328,030,281	56,630,650	178,857,552
November	126,467,062	164,319,169	205,878,333	331,144,527	79,411,271	166,825,358
December	114,402,970	.....	246,266,047	.....	131,863,077	.....
Total	$1,789,022,426	.....	$2,114,257,539	.....	$325,235,113	.....

[1] Exports exceed imports throughout by amount given, except when marked (—) where imports exceed exports.

BUILDING OPERATIONS

Chiefly as a result of the war in Europe and the bad business conditions at home, building operations in the United States showed a considerable decline during 1914 as compared with 1913, the returns for 156 cities showing a contemplated outlay of only $54,679,000 for the month of September, or over 26 per cent. less than for the corresponding month of 1913 and nearly 22 per cent. below September, 1912. This unfavorable movement continued during so large a part of the year 1915 that the aggregate showing during the first nine months of the year is still below that shown during the corresponding period of 1914. According to the *Commercial and Financial Chronicle*, referring to the record of the first nine months:

> The aggregate since Jan. 1 is, of course, less than a year ago. The contemplated disbursements at the 163 cities reach $626,646,573, as against 656 millions in 1914 and 700 millions in 1913. Greater New York's figures are 134½ millions, 118¼ millions and 123¾ millions respectively, in the three years, and for the other cities collectively are 492½ millions, comparing with 537½ millions and 559 millions. Twenty-five cities in New England show an aggregate gain of 14⅛ millions over 1914. The 40 municipalities in the middle section (New York City excluded) exhibit a decrease of 10¼ million dollars. On the Pacific Coast (14 cities) a decline of 15½ millions is indicated and it is quite generally shared in; and in the South (31 cities) there is a loss of 11½ millions. On the other hand the Middle West (29 cities) exhibits a strictly nominal loss but the "Other Western" division, comprising the country west of the Mississippi River, except Arkansas, Texas, Oklahoma and the states on the Pacific Coast, makes a quite unfavorable showing, the decrease at 23 cities reaching 11½ millions.

BUILDING CONSTRUCTION
(20 Leading Cities)

	1914	1915
January	$29,819,106	$26,693,647
February	31,339,484	29,326,909
March	54,678,980	43,512,532
April	48,934,834	49,380,923
May	52,825,017	54,665,537
June	51,929,870	40,353,022
July	50,617,332	38,958,350
August	34,168,381	44,269,911
September	33,932,356	42,971,076
October	31,103,174	43,472,626
November	21,749,227	43,031,947
December	23,860,082	43,186,000

In keeping with the general revival in business conditions elsewhere the figures for building operations are becoming more and more favorable. Thus, the returns for September, 1915, from 163 cities, as reported by the *Chronicle*, indicate a contemplated outlay of $72,862,340, or $17,995,319 (31 per cent.) more than for the same month of 1914 and only a little below the 1913 aggregate. The improved conditions seem to prevail in practically all sections of the country, losses of importance being reported only from Baltimore, Denver, St. Paul, Rochester, Des Moines, Seattle, Los Angeles, Grand Rapids, and Salt Lake City.

BUSINESS FAILURES

In the last issue of the YEAR BOOK (p. 325) it was explained that the failure situation during the year 1914 became increasingly bad, the third quarter of the year being the poorest for the year and the showing for the first nine months being more unfavorable than that of any previous similar period. Fortunately the year 1915 shows some improvement, in that, while the number of failures does not yet compare favorably with preceding years, the volume of indebtedness involved is not nearly so large. The situation for the first nine months of 1915, as compared with the corresponding period for 1914, is well summarized by the *Commercial and Financial Chronicle* in the following:

> The exhibit for the third quarter of the current year (July-September inclusive) is the poorest for the period on record, as regards number, but the aggregate indebtedness, $52,876,525, has been exceeded on a number of occasions, notably in 1914 ($86,818,291), in 1896 ($73,284,649), in 1893 ($82,469,821), and in 1887 ($73,022,556). Here also a decrease from a year ago is shown in the debts in all the various divisions into which the failures are segregated. Manufacturing insolvencies this year stand for $19,454,101, against $33,218,333; trading for $26,322,788, against $28,055,160, and brokers, etc., for but $7,099,656, against $25,544,798, this last total covering the failure in August of S. H. P. Pell & Co. and five other brokerage concerns for over 17 million dollars. Banks also were much less adversely affected in the third quarter of the year, the list of suspensions totaling 20 and representing obligations of $3,257,000, against 68 and $20,864,916 in 1914.

The failures for the nine months of 1915, as already intimated, exceeded largely all previous similar periods as regards number, but the volume of indebtedness was smaller than for 1914 and 1893. Defaults for the period in 1915 were 17,288, against 12,841 in 1914 and 11,712 in 1913, and the liabilities involved were $241,464,060, against $271,918,021 and $196,746,376, respectively. Manufacturing liabilities totaled $89,698,009, against $94,195,478 in 1914 (see also XIX, *Manufactures*), and trading debts at $123,691,220 compared with $130,283,368, which includes the 40-million Claflin insolvency. The failed indebtedness of brokers, agents, etc., was $23,095,245, against $47,439,175. Suspensions of banks, etc., in the nine-month period numbered 106 for $23,095,245, as contrasted with 161 for $49,486,228 in the preceding year. By months the total commercial failures, as reported by R. G. Dun & Co., were as follows for the two years 1914 and 1915:

BUSINESS FAILURES

	Liabilities		Number		Totals for Year	Liabilities	Number
	1914	1915	1914	1915			
January	$37,285,515	$50,108,578	1,793	2,613	1908	$259,341,727	14,873
February	21,256,965	28,674,137	1,356	2,072	1909	146,763,569	12,430
March	23,826,353	26,914,870	1,362	1,983	1910	195,223,045	12,109
April	19,127,464	38,734,038	1,279	1,868	1911	189,358,591	13,062
May	20,469,584	19,595,994	1,201	1,572	1912	202,085,974	14,647
June	58,233,453	18,819,222	1,161	1,622	1913	282,232,584	15,296
July	25,441,310	17,177,926	1,315	1,591	1914	358,391,742	17,531
August	38,709,617	15,017,218	1,235	1,328	1915	302,286,148	22,156
September	27,394,769	14,740,874	1,492	1,338			
October	26,641,316	21,234,425	1,561	1,476			
November	25,182,881	15,694,434	1,700	1,565			
December	34,822,515	19,605,274	2,076	1,704			

RAILROAD EARNINGS

Volume of Traffic.—Contrasted with the year 1914 the gross earnings of American railroads during the first half of the calendar year 1915, the latest period for which a detailed compilation is thus far available, compare unfavorably. The unfavorable conditions confronting American railroads during this period are clearly shown in the *Commercial and Financial Chronicle's* classified compilation of gross and net earnings for 489 roads, this number including every road with annual earnings of $100,000 or more. Gross earnings, according to this compilation, totaled only $1,407,465,982 for the first six months of the year, or $39,998,560 (2.76 per cent.) less than during the corresponding period of 1914. As pointed out by the *Chronicle* in its review of the earnings of this period:

> The roads have suffered a further considerable reduction in the aggregate of their gross earnings after a very considerable shrinkage in 1914. In other words, the period in 1915 has been a very poor one for these rail transportation lines, even as had been the corresponding period of the preceding year. The continued contraction reflects accurately the unfortunate position of the railroad industry, it having failed to share in the reviving activity so evident in many other industries as a consequence of the stimulating effect of European war orders.

Earnings during the latter months of 1915, however, as shown by later compilations, clearly indicate some improvement over conditions in 1914 and show that the railroads are beginning to benefit from the stimulating effect upon business of European war orders and from the movement of the year's record-breaking crop. An increasing volume of traffic is also indicated by the rapidly decreasing number of idle cars. In 1914 the number of such cars considerably exceeded 200,000 during most of the year, and even in the midst of the crop-moving season (September to December) the surplus ranged between 131,000 and 170,000 cars. Subsequently this surplus again increased month by month until by Aug. 1, 1915, it reached the very high figure of 327,084 cars. Following this date the number of idle cars rapidly decreased, the surplus in November amounting to only 26,239, the smallest since Nov. 15, 1913, and less than one-fifth the surplus of a year ago. At the time of writing the press of the country is predicting an actual shortage of cars, and in various sections this shortage is already making itself felt. Ordinarily in the late fall the heavy movement of grain and coal taxes the railroads to their full capacity, but in 1915 the carriers had also to contend with the enor-

IDLE CAR FIGURES
(Fortnightly Reports of Net Surplus)

1913		1914		1915	
Jan. 15	28,439	Jan. 1	188,850	Feb. 1[2]	226,641
Feb. 1	37,260	" 15	214,889		
" 15	22,183	Feb. 1	209,678	Mar. 1	303,985
Mar. 1	31,381	" 14	197,052		
" 15	37,775	Mar. 1	153,907	April 1	313,073
April 1	57,988	" 15	124,865		
" 15	57,498	April 1	139,512	May 1	289,627
May 1	39,799	" 15	212,869		
" 15	50,294	May 1	228,879	June 1	295,092
" 31	50,908	" 15	238,642		
June 14	63,927	" 31	241,802	July 1	275,111
" 30	63,704	June 15	232,334		
July 15	69,405	July 1	219,540	Aug. 1	264,243
Aug. 1	58,455	" 15	226,541		
" 15	54,425	Aug. 1	196,665	Sept. 1	183,669
" 30	58,306	" 15	172,145		
Sept. 15	40,159	Sept. 1	163,326	Oct. 1	78,299
Oct. 1	10,374	" 15	136,049		
" 15	*n* 6,048	Oct. 1	131,027	Nov. 1	25,239
Nov. 1	*n* 1,842	" 15	151,982		
" 15	22,652	Nov. 1[1]	170,096	Dec. 1	37,402
Dec. 1	57,234				
" 15	101,545			Jan. 1, 1916	46,955

n = net shortage. [1] Publication discontinued.
[2] Publication resumed, but monthly instead of fortnightly as formerly.

RAILROAD GROSS AND NET EARNINGS
(Commercial and Financial Chronicle)

Section or Group	Gross Earnings			
	Jan. 1 to June 30		Increase(+) or Decrease(—)	
	1915	1914	Total	Per Cent.
Group 1 (18 roads), New England	$68,109,816	$68,568,763	—$458,947	0.70
Group 2 (87 roads), East and Middle	387,401,369	388,059,481	—658,112	0.17
Group 3 (64 roads), Middle West	162,701,796	163,656,657	—954,861	0.58
Groups 4 and 5 (98 roads) Southern	183,891,782	202,892,239	—19,000,457	9.36
Groups 6 and 7 (79 roads) Northwest	297,701,878	311,076,848	—13,374,970	4.30
Groups 8 and 9 (93 roads) Southwest	222,712,456	222,192,713	+519,743	0.23
Group 10 (50 roads), Pacific Coast	84,946,885	91,017,841	—6,070,956	6.66
Total (489 roads)	$1,407,465,982	$1,447,464,542	—$39,998,560	2.76

	Mileage		Net Earnings			
	1915	1914				
Group 1	7,833	7,818	$20,115,026	$14,447,641	+$5,667,385	39.23
Group 2	29,499	29,307	109,298,017	89,157,749	+20,140,268	22.59
Group 3	23,708	23,651	36,411,295	22,892,009	+13,519,286	59.06
Groups 4 and 5	42,196	41,748	52,564,849	52,811,302	—246,453	0.46
Groups 6 and 7	68,753	67,988	88,794,809	84,677,457	+4,117,352	4.85
Groups 8 and 9	57,167	56,919	58,997,872	53,294,567	+5,703,305	10.70
Group 10	18,589	18,454	28,501,680	29,787,482	—1,285,802	4.32
Total	247,745	245,885	$394,683,548	$347,068,207	+$47,615,341	13.72

mous shipments of war orders. Attention is called also to another unusual feature, viz., the congestion at coast ports owing to the inadequacy of ocean steamship service, which late in the year forced some roads to resort to freight embargoes.

Comparison of Gross and Net Earnings.—Last year's compilation (*A. Y. B.*, 1914, p. 327) showed that gross earnings for the fiscal year 1914 not only declined over $79,000,000 (2.51 per cent.) as compared with 1913, but expenses at the same time, despite unusual efforts at curtailment, increased by over $31,000,000 (1.43 per cent.). As a result, net earnings for the year showed a most extraordinary decline of $110,000,000 (11.47 per cent.), this decrease being common to all sections of the country.

While gross earnings during the first half of 1915, as already stated, decreased 2.76 per cent. as compared with the first half of 1914, it is important to note that the showing as to net earnings is entirely different from that of the gross. Despite the further loss in gross, net earnings show a very material increase, an improvement which, as the *Chronicle* points out, is "significant chiefly of the fact that expenses have been cut to the bone out of a fear that net income would otherwise fall to such a basis as to invite disaster." The *Chronicle's* compilation for the half year shows that the loss of $39,998,560 in gross earnings has been much more than offset by a reduction in expenses of no less than $87,613,901, thus bringing about a gain in net earnings of $47,615,341, or 13.72 per cent. Of course, much of this saving was obtained at the expense of proper maintenance, and will therefore have to be replaced at some later date.

BANK CLEARINGS

The recent rapid improvement in business conditions is clearly demonstrated by bank clearings, one of the best barometers by which to judge the rise or fall of business activity. During the first nine months of 1915 total bank clearings for the United States aggregated $127,929,000,000, compared with $119,780,000,000 for the corresponding period of 1914, an increase of over 6.5 per cent. Practically all of this increase in the total figures is traceable to the city of New York, since aggregate clearings "outside of New York" during the first nine months of the year show an increase of less than one-half of one per cent. over those of 1914. This

BANK CLEARINGS

	Bank Clearings Outside of New York		Total Bank Clearings	
	1914	1915	1914	1915
January	$6,826,079,000	$6,190,796,000	$16,198,199,000	$13,478,489,000
February	5,627,983,000	5,426,184,000	12,865,538,000	11,908,010,000
March	6,403,916,000	6,278,241,000	14,253,206,000	13,842,355,000
April	6,352,935,000	6,197,212,000	14,899,453,000	15,008,877,000
May	5,928,569,000	5,987,717,000	13,168,100,000	14,622,873,000
June	6,103,821,000	6,092,070,000	13,948,024,000	14,117,552,000
July	6,311,878,000	6,229,474,000	14,492,363,000	14,924,888,000
August	5,350,958,000	5,730,056,000	9,932,159,000	14,267,498,000
September	5,398,919,000	6,135,362,000	10,027,042,000	15,759,725,000
October	6,125,538,000	7,404,677,000	11,734,975,000	20,144,356,000
November	5,682,739,000	7,548,618,000	11,082,180,000	19,378,038,000
December	6,114,802,000	7,971,642,000	12,644,577,000	20,302,782,000

average showing is attributable to the adverse tendencies noted in the last issue (p. 328), which continued during the first half of 1915. In fact, the figures for each month from January to July inclusive were smaller than the corresponding figures in 1914.

With the beginning of August, 1915, however, the clearings forged rapidly ahead of those recorded in 1914, and nearly every week has shown an advance over its predecessor. Thus, for the months of August and September the total clearings equalled $14,267,000,000 and $15,759,000,000, as compared with only $9,932,000,000 and $10,027,000,000 in 1914, an increase for the two months of approximately 50 per cent. For the week ending Oct. 23 the clearings compiled for 137 cities by the *Commercial and Financial Chronicle* show an increase of 76.1 per cent. over those of the same week in 1914. This remarkable showing, moreover, is quite general throughout the country, the following percentage increases being assigned to the several sections of the country: middle states, 114.9; New England, 33.4; middle western states, 24.9; Pacific states, 20.2; other western states, 16.3; southern states, 39.9.

Last year's account assigned several special reasons (aside from the general business depression that existed throughout the country) for the very low bank clearings for the year. On the one hand the very low figures for New York, Philadelphia and Boston (showing respectively a drop of 40.6, 14.3 and 19.8 per cent. for September, 1914, as contrasted with September, 1913) were due to the relative importance of these cities as financial centers of the country. As such they were naturally affected severely by the adverse conditions resulting from the war, especially as regards the disarrangement of our export trade and the closing of the stock and cotton markets. Stock exchanges, owing to the enormous volume of transactions, have always been an important factor in bank clearings, and in all three centers organized security markets were closed from July 30 to nearly the middle of December. With reference to individual cities large decreases in clearings were especially shown throughout the iron and steel centers, owing to the depressed condition of the iron and steel trade, and also in numerous southern cities, such as Houston, Galveston, Austin, Mobile, Savannah and New Orleans, where the figures reflected the restricted movement of cotton, much of this leading staple being held at plantations and gins until satisfactory arrangements could be made for its exportation.

Turning to the year 1915 we find that these conditions have entirely disappeared. Instead of suffering from suspended stock exchange markets, the eastern centers are at present witnessing one of the most animated stock-market booms in the history of the country, with transactions in New York very frequently exceeding the 1,000,000-share mark. The iron and steel business, instead of being depressed, as was the case in 1914, enjoys an almost unprecedented prosperity, the excellent showing being chiefly the result of the tremendous

orders for war munitions and other materials. The southern centers, likewise, are again enjoying a fair cotton market at prices about 50 per cent. higher than at the end of 1914. For the week ending Oct. 23 the bank clearings of the aforementioned cities show the following percentage increases over the figures for the corresponding week of 1914: New York, 126.3; Philadelphia, 40.2; Boston, 31.0; Houston, 56.3; Galveston, 43.8; Austin, 20.8; Mobile, 26.6; Savannah, 86.2, and New Orleans, 40.7. The greatest increases in clearings, it may be stated, have occurred in the middle Atlantic and southern states, the total for all cities in the first section increasing 114.9 per cent. and in the latter 39.9 per cent.

THE SECURITY MARKET

Volume of Stock Transactions.—Conditions in the security market in 1915 make a very favorable showing along nearly all lines as compared with the preceding year. Instead of the extreme dullness which prevailed in stock transactions on the New York Stock Exchange during all of the year 1914, sales during 1915 were very much better and in recent months reached enormous proportions, the daily transactions frequently exceeding the 1,000,000-share mark. Sales during the first seven months of 1915 were 76,301,612 shares, or nearly 70 per cent. in excess of the transactions recorded during the same seven months of 1914. During the first nine months of 1915 total sales amounted to 115,089,032 shares, truly a noteworthy figure when compared with the corresponding figures of 45,970,577 shares in 1914, 65,149,991 shares in 1913, 95,604,426 shares in 1912 and 92,294,988 shares in 1911.

Moreover, during the months of August and September, 1915, the sales totaled respectively 20,388,134 and 18,399,286 shares, or at the rate of approximately 228,000,000 shares a year. These figures, when viewed in connection with the general and rapidly increasing price level, give unmistakable evidence of one of the most violent stock-market booms in American history, and clearly show that the speculative forces in the security market are engaged at present in discounting an industrial revival.

Stock Prices.—The rapid increase in the volume of stock transactions has been accompanied, as already indicated, by a rapidly rising tendency in prices. While the press has called attention primarily to the huge rise in the price of shares representing corporations benefiting from war or-

SECURITY MARKET TRANSACTIONS AND PRICES
(New York Stock Exchange)

	Total Transactions				Average Security Prices			
	Shares of Stock		Bond Sales		10 Leading Stocks		10 Leading Bonds	
	1914	1915	1914	1915	1914	1915	1914	1915
January...	10,088,895	5,076,210	$89,474,000	$57,110,500	141.5	133.0	92.5	89.2
February..	6,220,059	4,383,449	69,377,000	43,842,500	142.3	131.8	94.0	89.0
March....	5,855,260	7,862,308	60,571,500	63,213,000	139.9	131.6	93.2	88.7
April.....	7,145,284	21,022,930	55,729,000	110,359,500	138.2	136.8	93.4	89.8
May.....	4,757,405	12,581,040	44,394,000	64,284,200	139.2	133.0	93.0	89.2
June.....	4,002,748	11,004,042	53,893,500	57,957,000	138.4	132.4	92.5	88.7
July.....	7,920,924	14,371,633	51,647,100	54,809,000	135.7	127.8	90.9	87.5
August....	[2]	20,432,350	[2]	73,024,000	128.4[1]	131.6	[2]	87.2
September.	[2]	18,399,286	[2]	80,741,000	[2]	133.1	[2]	86.6
October...	[2]	26,678,953	[2]	104,122,500	[2]	141.5	[2]	88.2
November.	[2]	17,634,270	1,997,500	130,088,500	[2]	136.9	[2]	91.7
December.	1,909,993	13,698,732	34,439,000	120,517,000	130.1	.....	87.7	....
Total, 1909	214,632,194							
1910	164,150,061							
1911	127,207,258							
1912	131,128,415							
1913	83,470,693							
1914	47,900,568							
1915	173,145,203							

[1] Closing price, July 30, 1914. [2] Exchange Closed.

RANGE OF STOCK PRICES DURING 1914 AND 1915
(New York Stock Exchange Quotations)

	1914			1915		
	High	July 30	End Oct.[1]	High	Low	End Oct.
American Car and Foundry	53½	44¾	39	98	40	97½
American Cotton Oil	46½	32	....	64	39	62½
American Locomotive	37¼	20½	17	74⅜	19	70⅜
American Smelting and Refining	71⅛	52⅜	47¼	95⅝	56	93¾
American Sugar	109⅞	100	100	114⅛	99½	113½
American Telephone and Telegraph	124½	114	110½	126	116	124¾
Atlantic Coast Line	126	114	....	115	98	115
Baltimore and Ohio	98⅜	72	61½	94⅞	63¾	94⅞
Brooklyn Rapid Transit	94½	79½	....	93	83¼	87⅞
Canadian Pacific	220½	157½	149½	185½	138	183½
Chesapeake & Ohio	68	41⅜	38¼	62¾	35⅝	62¾
Chicago, Milwaukee & St. Paul	107⅛	85¼	77½	98½	77⅜	94¾
Chicago & Northwestern	136⅞	127½	120	132	118½	131⅝
Erie	32½	20½	17	44½	19⅞	42¾
Great Northern, pfd	134¾	114	105	125½	112¾	125½
Illinois Central	115	106	101½	113	99	110
Lehigh Valley R. R	156¼	122	....	156	74½	80⅜
Missouri Pacific	30	8	....	18¼	1¾	5⅛
New York Central	96⅝	77	73⅜	103⅜	81½	103
Northern Pacific	118½	97	....	115½	99⅛	115½
Pennsylvania R. R.	115½	106	99⅝	118	57½	60¼
Reading	172¼	140	....	163⅝	77½	83
Rock Island	16⅜	⅞	....	2½	¼	⅜
Southern Pacific	99½	84⅞	76¾	102	81¼	101½
Southern Ry	28¼	17¼	13½	25⅞	12¼	25¾
Union Pacific	164⅜	113½	105	138½	115¼	138¼
United States Steel	67¼	51⅝	39½	88¼	38	88

[1] Bid quotations for unofficial trading in New York. x = ex-dividend.

ders, the fact should not be overlooked that the price of shares of other industrial corporations as well as standard railroads has also increased materially. Our table of quotations of representative railroad and industrial stocks (published in previous issues of the YEAR BOOK, and usually regarded as market leaders) shows that, with few exceptions the closing prices of July 30, 1914, were the lowest recorded since the last high level in 1909. The average price of the 27 stocks enumerated in the table stood at 70 on that date. By the close of October, however, this average price had risen to 89, or an increase of more than 27 per cent. Roger W. Babson's "Weekly Barometer Letter" gives the average price of 20 representative railroad stocks as 106.53 at the middle of November, 1915, as compared with 89.41 on July 30, 1914, 104.43 in the closing week of October, 1913, 135 in January, 1906, 84 in November, 1907, and 131.5 in August, 1909. As regards 12 representative industrials the average price at the middle of November, 1915, is given as 121.15, compared with 71.42 on July 30, 1914, 78.60 for the closing week of October, 1914, 98.7 in January, 1906, 55.7 in November, 1907, and 97.7 in August, 1909.

Prices of War Stocks.—The greatest increase in stock prices by far has occurred in that group of industrial corporations which are alleged to be deriving huge profits in the execution of war contracts, or which are supposed to benefit indirectly from the recovery in certain lines of business which have been greatly stimulated by the European War. Reference is had particularly to the shares of (1) those corporations engaged in the manufacture of ammunition, railroad equipment and army supplies; (2) those receiving orders for food and clothing, enormous quantities of which are needed by the belligerent countries to equip their armies or to replace the decreased production occasioned by the withdrawal of numerous workers from their normal occupations; (3) iron and steel companies called upon to furnish materials to meet the domestic requirements for raw materials, machinery and additional working equipment along many lines, in order to fulfill their foreign orders; (4) automobile manufacturing companies

which have made large contracts for foreign delivery; and (5) steamship companies which are benefiting from the greatly increased freight rates prevailing at the present time. The unprecedented rise in the shares of many of the corporations referred to is indicated by the accompanying table of 22 companies. The first column gives the low quotation for 1914, reached in most instances at or shortly before the beginning of the war, and the second column gives the high quotation for 1915, reached in nearly all instances during either September or October. Summarizing the table, it appears that the aggregate price of the 22 stocks was $735 at the low figure in 1914, and $3,205 at the high price in 1915. In other words, during the short space of about 14 months the average price of the stocks under consideration shows an increase of approximately 336 per cent. Such an unprecedented speculative movement, of course, was based primarily upon the hope of large profits from war orders, and rumors concerning large contracts at high prices have been given the widest currency in the newspapers and financial journals. The movement, however, was also greatly facilitated by the fact that money was exceedingly abundant, that low rates for loans have prevailed throughout the year, and that the Federal reserve system has given a new feeling of security to the speculative public.

QUOTATIONS FOR WAR STOCKS

	Low, 1914	High, 1915
American Woolen Co	12	57⅞
Amer. Zinc, Lead & Smelting Co.	12¼	70¼
American Car & Foundry	42¼	98
American Can	19¼	68½
Bethlehem Steel Co	29½	600
Baldwin Loco. Works	38½	154½
Cambria Steel	40	75
Crucible Steel	11½	109⅞
Distillers Securities Corporation.	11	50½
General Chemical Co	160	366
General Motors Co	37⅜	395
Int. Mercantile Marine Co	⅜	17¼
Maxwell Motor Co	3	92
National Lead	40	70⅜
New York Airbrake Co	58	164½
Pressed Steel Car Co	26¾	78¼
Studebaker Corporation	20	195
Tennessee Copper Co	24¾	70
United States Steel	48	88½
Virginia Carolina Chemical Co	15⅛	52
Westinghouse Electric & Mfg. Co	32	74⅞
Willys-Overland Co	58	265½

Increases in prices, such as are indicated above, give unmistakable evidence of speculative excesses on the stock exchange. In fact the fluctuations in war stocks have been so wild and erratic in recent months, and the level of prices apparently so inflated, that banks and brokers have manifested alarm as to the possible consequences that may result from a sudden collapse of the speculative bubble, especially if the movement is allowed to continue unchecked. Various leading financial journals have also called upon the stock exchange to apply corrective measures before it is too late. While little has been done as yet along this line, it should be noted that during the first week in October the New York Stock Exchange issued a circular letter calling the attention of its members to certain resolutions, the strict observance of which is required. These resolutions prohibit the carrying of accounts of clerks of members and of financial institutions, and also make it an act "detrimental to the interest and welfare of the Exchange" for a stock-exchange house to accept accounts "without proper and adequate margin."

Bond Sales.—Bond sales, while somewhat larger in volume than during 1914, by no means show the increase noted in the case of stocks. For the first seven months of 1915 the sales on the New York Exchange amounted to $451,575,700, as compared with $425,086,100 during the same months in 1914, and $318,741,400 in 1913. During 1914 only three months showed total transactions in excess of $60,000,000, while during the first nine months of 1915, five months have exceeded this figure.

Contrary to the movement prevailing in stocks, bond quotations have shown a slightly declining tendency. During the first nine months of 1914 the average price of ten leading representative bonds ranged between 94.0 and 90.9 For January, 1915, this average price was 89.2; by September the price had declined to 86.6, but since that time has again materially increased. Mr. Babson's "Weekly Barometer Letter" gives the average price of these bonds at the

middle of November as 90.7, compared with 107 in March, 1905, 88 in November, 1907, and 102.6 in February, 1909. The recent rise in bond values, which has been accompanied by a considerable expansion in the volume of transactions, is attributable chiefly to the accumulation of bonds by the banks. With ample reserves on hand and with interest rates very low it is only natural that the banks should resort to the purchase of high-yield bonds. Most experts on the subject, however, are taking the view that a continuation of the recent strength in the bond market need not be viewed as assured for any great length of time. They point to the great destruction of capital as a result of the war. Moreover, over one billion dollars has already been loaned by the United States to Europe and a supplementary credit of another $200,000,000 is under contemplation. In view of these factors, they regard it as altogether likely that interest rates on long-time funds will increase and remain high, thus making ordinary low-interest bearing bonds less attractive.

New Securities Listed.—Listings of securities on the New York Stock Exchange during 1915 were limited in amount and do not present a satisfactory showing with even a poor year like 1914. While the first nine months of 1914 showed total listings of $840,507,300, the corresponding months in 1915 represent a total of only $716,210,150, or a decrease of nearly 15 per cent. The 1915 showing is unusually small when compared with the large totals of 1,786 millions in 1912, 1,329 millions in 1911, 1,678 millions in 1910, and 2,439 millions in 1909. The poor showing of the present year is traceable chiefly to the collapse of credit for several months following the outbreak of the war and the resulting disturbed business operations, the effects of which are still largely operative. According to the *Commercial and Financial Chronicle's* account of the listings for the first half of the year:

> Not a single steam railroad or electric railway contributed anything whatever in the nature of shares offered for subscription to its shareholders. Still more striking is the fact that, if we omit the stocks issued by the New York Central Railroad (the new company) for the absorption of the Lake Shore and other subsidiaries, and by the Interborough Consolidated Corporation for the readjustment of the finances of the Interborough-Metropolitan Co. of New York, there is left of the railroad and electric railway shares listed in the half-year only six million dollars, and of this amount four millions represents stock which one company (the Atchison) was obliged to issue in exchange for convertible bonds tendered by the holders for that purpose. Moreover, while the total amount of bonds issued for new capital is shown by our listing table to be 235 millions, or about the same as the restricted totals for several years past, even this small sum is swelled by no less than 92 millions of 4¼ per cent. bonds of the city and state of New York.

LISTINGS OF NEW SECURITIES

	1914	1915
January	$162,294,200	$84,282,800
February	98,916,200	57,489,600
March	82,302,700	160,556,400
April	57,515,400	33,943,550
May	30,014,000	28,409,000
June	62,632,500	120,044,000
July	234,534,000	15,717,000
August	104,524,300	123,210,000
September	7,774,000	92,557,800
October	42,359,000	95,856,250
November	68,353,500	119,398,000
December	12,437,400	.....

Total, 1909	$2,439,656,870
1910	1,678,147,570
1911	1,329,616,345
1912	1,786,986,170
1913	968,738,315
1914	964,157,200
1915	.....

INCORPORATIONS

New incorporations during 1914, as indicated by the statistics compiled by the *Journal of Commerce* for the incorporation of companies[1] in the eastern states with an authorized capital of $1,000,000 or more, showed a tremendous decline as compared with even the poor showing for 1913. Thus, total incorporations for the year in the eastern states aggregated only 895 millions, as contrasted with 1,534 millions for 1913, a phenomenal decrease of nearly 42 per cent. As contrasted with this poor showing the year 1915 indicates a change for the better, especially during the later months. During the first nine months of 1915 total incorporations aggregated 892 millions, whereas during the corresponding period in 1914 the total amounted to only 672 millions.

It should be noted, however, that the entire gain in 1915 as compared with 1914, is traceable to the last month under consideration (September) when incorporations totaled 286 millions. It also appears likely that, despite the improvement noted, the total for all of 1915, although greatly exceeding that of 1914, will fall far short of the aggregate figures for 1913 and 1912, viz., 1,534 millions and 2,295 millions respectively.

INCORPORATIONS OF $1,000,000 AND OVER

	1915	1914	1913	1912
January	$51,150,000	$120,050,000	$332,450,000	$210,520,000
February	53,950,000	51,575,000	191,500,000	166,300,000
March	70,050,000	57,700,000	166,030,000	159,578,000
April	32,200,000	136,185,000	198,718,000	281,457,000
May	78,950,000	62,700,000	172,200,000	140,284,000
June	181,247,100	70,050,000	79,550,000	280,170,000
July	71,100,000	68,700,000	83,650,000	253,518,000
August	67,100,000	50,600,000	63,500,000	164,500,000
September	286,625,000	54,800,000	42,750,000	115,050,000
October	208,695,000	35,487,500	70,856,300	169,495,000
November	190,075,000	81,650,000	77,800,000	154,200,000
December	135,125,000	105,450,000	55,250,000	200,100,000
Total	$1,426,267,100	$894,947,500	$1,534,254,300	$2,295,172,000

THE MONEY MARKET

Money-market conditions during 1915 were the opposite of those described for the last half of 1914 (*A. Y. B.*, 1914, p. 332). In the first place the surplus reserves of the New York Clearing House banks were comfortably large throughout the year, ranging from a minimum of $121,000,000 in January to a maximum of $198,000,000 in October. Such a large surplus certainly compares very favorably with the deficits of $29,000,000 and $28,000,000 during the months of August and September, 1914, i.e., immediately following the opening of hostilities abroad. As a result there was an absence of credit stringency throughout the year, time rates ranging between the low monthly averages of 3¼ and 4 per cent., and call rates between 1⅝ and 2¼ per cent. This low range of rates is noteworthy when it is recalled that during the months from August to November, 1914, time rates ranged between 5⅞ and 7 per cent. and call loan rates between 5⅜ and 7 per cent. The low money rates prevailing during the year constitute one of the primary causes back of the material and long sustained rise in the stock market, discussed in a preceding section of this review.

A very noticeable change has also occurred in the movement of foreign-exchange rates. At the outbreak of the war the market for sterling exchange came to a complete standstill, only small transactions being negotiated at rates as high as $6.25 to $7.00 to the pound sterling for cable transfers. Even at the beginning of October, 1914, rates for cable transfers were quoted as high as $5.02¼ and demand bills at $5.01. These high rates, as explained in last year's account (p. 332), were due to the fact that America owed large sums to Europe at that time, that the heavy sale of American securities was all one way, and that there was also a very active demand to send relief to American tourists.

These special conditions, however, soon disappeared and were in turn supplanted by other factors which drove exchange rates down to figures which have no parallel in the life of the present generation. Under the stress of a great war Great Britain and her allies were compelled to become buyers of foodstuffs, ammunition and munitions of war in the United States on an unheard-of scale (see *Foreign Trade, supra*). As a consequence, the export movement from this country became extraordinarily large, while our importations of merchandise from the same countries were greatly reduced since the belligerent countries under the stress of raising large armies were obliged greatly to diminish their sales to us of many of the goods which normally

were exported by them in large quantities. As a result there occurred a depreciation in the exchange value of all foreign money units on such a scale as to attract the attention of the whole financial and commercial world. Demand sterling on London at one time declined to $4.50, a figure which has no precedent since the present method of quoting exchange has been in existence, while French cheques at one time exceeded six francs. Since the par of exchange for the pound sterling is $4.8665 the rate of $4.50 meant a loss of 36 cents on every pound. Similarly, the French rate of six francs means that it required six francs to make a dollar, although normally only 5.18 francs are required for the purpose. This abnormal situation was somewhat improved by the flotation of a $500,000,000 Anglo-French bond issue in the United States. But despite this issue exchange rates are still abnormally low, sight sterling being quoted at the middle of November at $4.65⅜, compared with $4.87 a year ago. At the close of the year sterling exchange had recovered to $4.74. French exchange remained low at 5.85 francs. The greatest decline, however, was in German exchange, which fell in December to 72⅞ cents for four marks, the normal rate being 95.28. (See also XIV, *Banking and Currency.*)

Lastly, attention should be called to the remarkable change that has occurred in the movement of gold between this country and Europe. During the first nine months of 1914 our

MONEY MARKET CONDITIONS

	Loans, Deposits and Reserves of New York Clearing House Banks					
	Loans (000 omitted)		Deposits (000 omitted)		Surplus Reserves (000 omitted)	
	1914	1915	1914	1915	1914	1915
January	$1,365,594	$1,524,087	$1,393.866	$1,529,079	$29,170,950	121,283,072
February	1,452,529	1,583,166	1,512,361	1,625,374	32,222,688	135,011,353
March	1,482,533	1.635,846	1,534,502	1,685,190	20,229,188	131,948,273
April	1,505,516	1,648,234	1,562,684	1,733,251	17,030,625	156,375,784
May	1,497,177	1,652,084	1,584,597	1,744,686	38,542,250	168,150,712
June	1,483,510	1,698,420	1,573,118	1,820,446	40,801,625	185,957,532
July	1,451,059	1,780,787	1,496,068	1,886,125	15,503,188	159,697,020
August	1,460,000e	1,841,944	1,450,000e	1,971,927	− 29,080,000e	177,793,428
September	1,521,760e	1,917,807	1,479,750e	2,091,568	− 28,000,000e	197,750,086
October	1,508,000e	2,085,174	1,466,600e	2,353,971	− 440,000e	179,155,250
November	1,495,000e	2,203,253	1,485,000e	2,408,797	72,253,685	168,161,815
December	1,501,757	2,238,101	1,457,125	2,435,873	117,935,538	155,086,160

− = Deficit. e = estimated.

	Money Rates						Gold Movements (Excess of Imports)	
	New York Monthly Average				Average Bank Rates, England, France and Germany			
	1914		1915					
	Time	Call	Time	Call	1914	1915	1914	1915
January	4½	2½	4	2¼	4⅖	5	$3,528,317	$6,204,889
February	4	1⅝	3¾	2	3½	5	+5,869,925	11,672,613
March	4½	1⅝	3½	1¾	3½	5	5,210,200	24,696,576
April	3¾	1⅝	3½	2⅛	3½	5	3,053,038	15,389,322
May	3½	1¾	3⅜	2	3½	5	+14,862,791	29,858,757
June	3½	1⅞	3⅜	1⅝	3½	5	+44,289,952	49,519,752
July	4½	2⅜	3⅝	1¾	3⅝	5	+30,277,709	15,071,203
August	6½	7	3⅝	1¾	5⅞	5	+15,080,398	60,480,858
September	6⅔	7	3⅜	2	5½	5	+19,125,612	40,008,658
October	7	6¾	3½	1⅜	5½	5	+44,356,969	76,731.059
November	5⅞	5⅝	3⅛	1⅞	5½	5	+7,134,753	57,320,387
December	4⅜	3⅜	3¼	2	5¼	5	3,978,139	.....

+ = excess of exports.

exports of gold exceeded the imports by $117,714,882. During the same period of 1915 our imports of the metal exceeded the exports by the huge total of $252,934,533. Such large importations have not been viewed with favor by American banking interests, and it is hoped that the recent Anglo-French loan will serve as a corrective measure. On the other hand, the desire of the belligerent countries to settle the balances owing to us by sending gold is apparent. As explained by the *Commercial and Financial Chronicle* in its issue of Sept. 4, when the rate for sterling exchange was $4.67½:

> There is no depreciation in the gold value of the pound sterling. The depreciation is in the bill of exchange. The gold, when brought here, has its gold value of $4.8665. The bill of exchange has a value in American money of only $4.67½. When gold is used in settlement of debts or obligations the full value of $4.8665 is realized. The bill of exchange, on the other hand, has only the current market value which now is $4.67½. The gold is being rushed here to save this discount and we may be sure that so long as any considerable discount remains English merchants and bankers will collect it in all parts of the world where it can be obtained and bring it to this point so as to escape the loss involved in making payment or settlement through depreciated bills of exchange.

PRICES AND COST OF LIVING

Until the outbreak of the war, as explained in the last issue (p. 324), general commodity prices showed a material decline during 1914 as against the price levels which prevailed during the two preceding years. For the first seven months of 1914 Bradstreet's index number stood at 8.8046, compared with 9,2115 for the full year of 1913, 9.1867 for 1912, 8.71 for 1911, 8.98 for 1910, and 7.88 for 1900. Following the outbreak of the war, however, price index numbers took an immediate and violent rise. Bradstreet's index number rose from 8.6566 in July to 9.8495 in August, an increase of nearly 14 per cent.; the London *Economist's* number from 2549 to 2780 in October, an increase of eight per cent.; and Gibson's number from 58.9 in July to 68.6 in September, an increase of over 16 per cent. The reasons for this violent rise were outlined last year (p. 334) and need not be repeated.

INDEX NUMBERS

Year	Bradstreet's	London *Economist*	Gibson's
1901	7.57	1948	44.5
1902	7.88	2003	53.5
1903	7.94	2197	49.0
1904	7.92	2136	48.3
1905	8.09	2342	47.3
1906	8.41	2361	49.8
1907	8.90	2508	50.9
1908	8.00	2223	54.2
1909	8.51	2231	59.2
1910	8.98	2407	59.3
1911	8.7129	2542	56.9
1912	9.1867	2699	62.6
1913	9.2115	2704	58.1
1914	8.9985	2643	60.8
1915:			
January	9.1431	2800	64.7
February	9.6621	3003	68.0
March	9.6197	3131	66.7
April	9.7753	3305	67.8
May	9.7878	3327	68.3
June	9.7328	3327	64.3
July	9.8598	3250	64.4
August	9.8113	3281	63.1
September	9.7934	3296	58.5
October	9.9778	3336	60.0
November	10.3794	3371	60.6
December	10.6473	3500	62.1

Following the reaction from the first violent rise in prices that took place immediately upon the declaration of war, prices again began to rise and continued to do so until they have reached the highest levels thus far recorded by the index numbers. Thus Bradstreet's number rose from 9.1431 in January, 1915, to 9.9778 in October, nearly 9.13 per cent. The October figure compared with the average index price for 1914 of 8.9985, or an increase of nearly 11 per cent. Similarly, the London *Economist's* number, representing the movement of prices in England, increased from 2800 in January, 1915, to 3336 in October, an increase of 19 per cent. Moreover, the latter figure shows an increase of over 26 per cent. when compared with the average number of 2643 for the year 1914. According to Gibson's index number, the average cost of foodstuffs in the United States for the first nine months of 1915, using 22 articles of general consumption of various grades, and calculated on the basis of the Dun system of weighing, stood at 65.1, as compared with 60.8 in 1914, 58.1 in 1913, 62.6 in 1912, 56.9 in 1911, 47.3 in 1905 and 44.2 in 1900.

THE CONDUCT OF BUSINESS

Alterations in Stock-Exchange Regulations.—The outbreak of the European War probably constituted the most important event in the history of the New York Exchange, since it necessitated the closing of that market for nearly three and one-half months. In this connection it should be noted that the only previous closing in the entire history of the Exchange, now in the second century of its existence, occurred in the great panic of 1873, when the market was suspended for ten days. As a sequence to the closing of the market on July 30, 1914, the Exchange was obliged to impose and enforce numerous restraints (in the form of rules and communications to members) for the guidance of brokers in their security dealings. The nature of these restraints and the reasons for their adoption were outlined in the last issue of the YEAR BOOK (p. 335) and it may be added that other American exchanges pursued much the same course. As soon as conditions permitted, however, the several restraints were removed one by one. The order in which this was done has been summarized as follows: [1]

> First, a market at or above the closing prices was organized under the Committee on Clearing House; then, committees to facilitate trading in listed and unlisted bonds were formed, and finally a market was provided for unlisted stocks. While plans for reopening the Exchange were discussed from an early date, nothing definite took shape up to the end of October. On Saturday, Nov. 28, the doors of the Exchange were once more thrown open and a restricted market in listed bonds was established. Under a resolution of the Governing Committee on Dec. 7, the Committee of Five was empowered to permit dealings on the floor of the Exchange in such stocks as it might designate under restrictions; finally, on Dec. 14, the Committee decided to transfer all stocks to the floor on the following morning, this act bringing their own rule to a close.

Among the remaining changes in regulations affecting stock exchange dealings mention should be made of the three following:

(1) The adoption by the New York Exchange of a new minimum-commission rule, providing for a minimum commission of 12½ cents a share in the case of stocks selling at $10 a share and over, and 6¼ cents when selling under $10. Heretofore it has been customary to charge a commission of $12.50 per 100 shares when the stock had a par value of $100 and only $6.25 per 100 shares when the par was $50. The governing committees of the Chicago and Philadelphia Exchanges have approved a similar change in their commission rules. It is also reported that dealers in "odd lots" on the New York Exchange decided on Oct. 5, at an informal meeting, to charge odd-lot brokers one-quarter of one per cent. instead of one-eighth of one per cent. above the last previous quotations.

(2) The new method adopted by the New York Exchange of quoting so-called "half-stocks" (those having a par value of $50 a share) on the dollar instead of the percentage basis. This ruling affects a number of very prominent stocks such as Reading, Pennsylvania, Westinghouse, etc. Thus, Pennsylvania shares, instead of being quoted at 120 per cent., for example, will henceforth be quoted at $60, a plan similar to that followed on the Philadelphia and other exchanges.

(3) The enactment of a law in Pennsylvania on June 8 imposing a state stock-transfer tax of two cents on each $100 of face value or fraction thereof. While the law is not applicable to agreements evidencing a deposit of stock certificates as collateral, the tax does apply, in addition to sales, to agreements of sales or deliveries of shares in any corporation, copartnership, joint-stock company, or association. The law, which was passed by a large majority, is expected to yield a revenue of between $300,000 and $400,000.

Attempts to Regulate Stock-Exchange Quotations.—The New York Stock Exchange has always taken the position, and in this it has been frequently supported by the courts, that it has absolute control over its quotation service and should be al-

[1] Summary abstract of H. G. S. Noble's volume on "The New York Stock Exchange in the Crisis of 1914," furnished by the *Commercial and Financial Chronicle.*

lowed to retain this control, since continuous quotations of prices from an Exchange are indispensable to bucket shops. The year 1915, however, witnessed several attempts to lessen the powers of the Exchange in this respect. Thus, bills were introduced in the legislatures of Connecticut and Massachusetts which sought to compel the Western Union Telegraph Co. to furnish New York Stock Exchange quotations to applicants not approved by the Exchange. The Connecticut bill, it may be stated, was reported adversely to the Senate by a joint committee of the legislature, and this report was accepted by the Senate by a vote of 23 to 5. Again, a temporary injunction was secured by certain Buffalo stock brokers against the Western Union Telegraph Co. and the Gold and Stock Telegraph Co., restraining them from shutting off their ticker service from the New York Exchange. This injunction was continued on June 23, pending the determination of the proceedings.

The Massachusetts Public Service Commission, on Sept. 8, ordered the Gold and Stock Telegraph Co., through its lessee, the Western Union Telegraph Co., "to remove the alleged discrimination against Calvin H. Foster, Boston correspondent of a member of the New York Stock Exchange, whose request for a ticker service had been refused because the application had not been approved by the Stock Exchange." Foster's petition alleged that he had been engaged continuously in the stock-brokerage business in Boston for 25 years and had the benefit of a ticker service all that time; that the service had been removed and its restoration refused by the telegraph company, unless his application for the service should be approved by the committee on quotations of the Exchange; that he desired quotations only for the conduct of a legitimate brokerage business; and that the withdrawal of the service and the refusal to restore it would cause him irreparable damage. In answer to this petition the Western Union Telegraph Co., as lessee, answering for the Gold and Stock Telegraph Co., contended (1) that the Commission had no jurisdiction in the matter, the same being within the sole jurisdiction of the Interstate Commerce Commission, and (2) that in view of the contract which it had with the Exchange, it had no legal right to deliver the quotations to persons other than those approved by the Exchange.

The Commission found that the Exchange had disapproved Foster's application but without giving the reason for such disapproval. In its report it held that the distribution of quotations is a business matter, a service productive of profits, and not a favor granted by the Exchange to the public. Nor should it be assumed, according to the report, that the Exchange necessarily acted in good faith. Instead, the Exchange should have been represented at the hearing before the Commission and should at that time have submitted evidence showing the unlawful and improper use for which Foster desired the quotations. In reaching its conclusion the Commission said in part:

> If the Exchange can, by disapproving the petitioner's application and without submitting, when its decision is called in question before the proper authorities, evidence to prove that he desires the quotations for unlawful and improper use, keep the respondents from furnishing him with those quotations and ticker service, it may thus without producing any evidence cut off from receiving them any banker, broker or other person for any reason, or, indeed, without reason. Such a power in this country is unthinkable. Where a public service or public use is involved there can be lodged nowhere powers of unjust and unreasonable discrimination.

Banks Protected on Loans Made on Securities Hypothecated by Brokers. —In March, 1915, the New York Supreme Court rendered a decision of great importance to bankers and brokers, in a case involving the right of a customer to recover securities from a bank which were procured by a broker through false representation and were then pledged with a bank as security for a loan. The action was brought by W. P. Fisher, a customer of the failed firm of Stoppani & Hotchkin, against the Mechanics and Metals National Bank of New York City. According to the allegation of the plaintiff the broker had induced him, through fraudulent representations in the form of a false

accounting, to deposit an unnecessarily large amount of marginal securities, consisting of certificates of stock endorsed in blank and unregistered bonds, and had, in turn, pledged these securities as collateral for a bank loan. Justice Shearn, in holding that there was a valid debt and a valid pledge, said in part:

> But even had the plaintiff succeeded in establishing that the delivery of the bonds and the indorsed certificates of stock in pledge were procured by false representations, he could not recover the securities from the bank with which they had been pledged by the brokers as security for a loan. The securities were *quasi* negotiable, and the bank was a *bona fide* holder, having taken the securities in due course with other collateral for a loan of $49,000. A blank transfer of a certificate of stock with an irrevocable power of attorney to transfer, signed by the person who appears by the certificate to be the owner, confers upon the holder of the certificate apparent title to the stock, and the *bona fide* transferee of such stock from the holder can hold the stock against the real owner, who is estopped from asserting his title (McNeil *v.* Tenth Nat. Bank, 46 N. Y. 325; Talcott *v.* Standard Oil Co., 149 A. D. 694; Mitchell *v.* Boyer, 160 A. D. 565). The reason for this well-settled rule is that where one has conferred upon another apparent ownership, it is contrary to justice and good conscience to permit him to assert his real title against an innocent purchaser from one clothed by him with all the *indicia* of ownership and power of disposition. Another reason for the rule is that such a case calls for the application of the legal maxim that where one of two innocent parties must sustain a loss from the fraud of a third, such loss shall fall upon the one, if either, whose act has enabled such fraud to be committed (Moore *v.* Metropolitan Nat. Bank, 55 N. Y. 46).

Justice Shearn also considered the one exception to the above rule, viz., "where the instrument claimed to create the estoppel is obtained by common-law larceny." The plaintiff had argued that obtaining property by false representation is larceny under the statute, and that the aforementioned exception should apply irrespective of the character of the larceny. Justice Shearn, however, held that "this argument ignored the reason for the exception in the case of common-law larceny, which involves a taking against the will of the owner. Obviously, there can be no estoppel by virtue of an act that is done unintentionally against one's will." Lastly, the court held that the bank was not put on inquiry and notice by virtue of the fact that the pledged certificates of the stock stood in the name of the customer and not in the name of the brokers.

Blue-Sky Laws.—In 1914 blue-sky legislation, existing in at least 19 states, fell under judicial condemnation in two states, Michigan and Iowa. The reasoning of the courts in these two cases is presented in the YEAR BOOK for 1914 (p. 339). These two victories for the opponents of such legislation were followed in 1915 by a third Federal-court decree holding the West Virginia law unconstitutional. The court based its opinion upon the Michigan and Iowa rulings and held that: "The opinions in these two cases are so clear, sound and convincing as to not only command admiration, but to lead us to the conclusion that nothing more complete and effective can now be added to them."

That the aforementioned decisions have proved effective in checking the spread and in modifying the present character of "blue-sky" legislation, is clearly shown by the record of the 1915 legislatures, as explained by Robert R. Reed in his report as general counsel of the Investment Bankers Association of America. No new state adopted any such law during 1915, although in nearly all of the forty-odd legislatures in session bills of one kind or another were introduced and in some instances strongly urged. Eight states, including Michigan, Iowa and West Virginia, revised their laws. The new Michigan act, however, represented chiefly a reënactment of the former law, and has already been attacked in a suit brought by the same parties as were interested in the former suit. According to press accounts, this action is intended as a test case which it is hoped may result in carrying the decision to the U. S. Supreme Court, thus securing the ruling of the highest court upon the legality of the principles involved in this important type of legislation.

Cotton Futures Act Declared Unconstitutional.—The principal event of 1914 connected with the cotton market was the passage of the so-

called Cotton Futures Act, which had for its purpose the detailed regulation of dealings in cotton futures and which compelled the use of government standards of grades. The law, which went into effect on Aug. 18, 1914, and marked the culmination of a long series of attempts at legislation of this kind, was fully described in the last issue of the YEAR BOOK (p. 336). The law again commands attention because of the opinion handed down by Judge Charles M. Hough of the U. S. District Court in New York on Oct. 13, 1915, declaring the act unconstitutional.

The decision was rendered in a case brought by Samuel T. Hubbard of the cotton brokerage house of Hubbard Bros. & Co. against John Z. Lowe, Jr., collector of internal revenue, and involved a contract of 100 bales for October delivery which purposely, in order to test the legality of the Act, was not made to conform to the requirements of the law. As a consequence a tax of $1,000 was imposed in accordance with the terms of the law, which tax was paid under protest and recovery of the same sought by suit against the collector. In this suit two contentions were advanced against the constitutionality of the Act, (1) that it originated in the Senate, whereas all measures for raising revenue must, according to the Constitution, have their origin in the House, and (2) that the Act taxed the nature of the transaction rather than the transaction itself. In declaring the law unconstitutional Judge Hough said:

> I am perhaps saved from inquiry whether the Cotton Futures Act is a "bill for raising revenue" by the agreement of counsel on this point. They have all asserted that though everyone who has studied the investigations, reports and discussions preceding and producing the passage of the Act, knows that nothing was further from the intent or desire of the lawmakers than the production of revenue; nevertheless, the result of their efforts is a revenue bill within the Constitutional meaning.
>
> In this instance a bill had passed the Senate; if the House had in form rejected that bill, returned it whence it came and then sent to the Senate their own bill on the same subject, it would have required nearly as much effort, time and attention to get to a conference committee as if the Senate had done nothing in the premises.
>
> It is not seen how this Court can disregard the information furnished by the Congress itself. The Cotton Futures Act is not and never was a law of the United States. It is one of those legislative projects which, to be a law, must originate in the lower house.
>
> For this reason alone the plaintiffs may take judgment.
>
> It is most unsatisfactory to feel compelled to ground decision upon so technical a point, but such as it is this finding disposes of the case, and I must leave undiscussed the argument equally able and interesting upon the other and permanently important branch of litigation.

Following the decision both the Treasury Department and the Department of Agriculture announced their intention to appeal the case to the U. S. Supreme Court. Pending this appeal both departments, it is stated, will enforce the provisions of the law, thus rendering violators of the Act liable to prosecution and to the prescribed tax in case the Supreme Court sustains the legality of the law. An announcement was also made by the board of managers of the New York Cotton Exchange to the effect that "no change is contemplated in the by-laws or rules of the Exchange affecting contracts."

Cotton Bills of Lading Central Bureau Discontinued.—Former issues of the YEAR BOOK (1911, p. 286; 1912, p. 326; 1913, p. 343) contained a discussion of the establishment of a central bureau which had for its purpose the registration of all cotton bills of lading against which drafts are drawn on foreign bankers. According to the plan notices of all export bills of lading issued by southern railroads were to be sent to the Bureau, and exchange-buying banks in New York City handling bills of exchange accompanied by railroad receipts were asked to request the Bureau to verify the signature on the receipts and pass upon the genuineness of the documents. The plan was proposed and perfected by the Liverpool Cotton Bills of Lading Conference Committee, and the Bureau was opened in New York on Sept. 1, 1911, its establishment growing out of the Knight-Yancey and Steele-Miller failures which involved gross irregularities in cotton bills of lading.

After nearly four years of trial the Bureau was discontinued on Aug. 31, 1915. According to published ac-

counts, "Charles S. Haight of New York City, who is the American representative of the Liverpool Cotton Bills of Lading Conference Committee, announced that the Bureau was forced to suspend in view of the fact that the exchange-buying banks of New York City refused to furnish it finanical support." It seems, according to the *Journal of Commerce*, that "the leading banks in New York City which handle cotton bills never approved of the Bureau and most of them declined right from the beginning to have any relations with it. Only a few of the institutions in the city, particularly the agencies of Canadian banks, have paid any attention whatever to the Bureau, and as far as the big banks are concerned the Bureau has been practically a dead issue for some time past."

New York Cotton Exchange Restricts the Rights of Alien Members.—By a vote of 119 to 40 the New York Cotton Exchange has adopted amendments to the by-laws restricting the privileges of alien members elected after Nov. 1, 1915. Such members are prevented (1) from voting in person or by proxy at any meeting of the Exchange upon any matter of importance; (2) from serving as officers or managers of the Exchange, or as members of any standing or other committee; and (3) from making or signing any contracts effected on the Exchange, or permitting any such contracts to be signed by a firm of which they are partners, unless at least one other partner is an American citizen, or, if an alien, has been elected prior to Nov. 1, 1915. Violation of any of the aforementioned provisions is to be punished by expulsion. In commenting on the possible reasons back of this movement of the Exchange the *Commercial and Financial Chronicle* offers the following:

> It may be true that the action taken by the Exchange was influenced by the fact that the Liverpool Cotton Association does not extend to American associate members the same privileges as are enjoyed by British subjects, while at the same time exacting higher dues from them. It may be true, also, that some resentment has been felt at the recent attempt of the Liverpool Exchange to bind its American associate members not to do business with Great Britain's enemies. But a more cogent explanation, and one carrying with it no hint of animus, is the desirability of making the organization a strictly American body, thus avoiding complications that might arise should the United States be at war with any foreign nation. Furthermore, the new rule operates against future German members as well as against Englishmen, and the German element has always been prominent upon the Cotton Exchange.

Chicago Board of Trade's Practice of Fixing "Call Prices" Declared Unconstitutional.—Reference was made in the YEAR BOOK for 1913 (p. 345) to the suit filed in Chicago by the Federal Government charging the Chicago Board of Trade with violating the Sherman Anti-trust Act by arbitrarily fixing the price of leading cereals to be received in Chicago. The suit, as explained, was aimed against the Exchange's practice of fixing the so-called "call price" of grain each day at the close of trading hours. According to the Government's contention grain bought by members of the Exchange is designated as "grain to arrive," and by establishing a call price under its rules for this "to arrive" grain, the Exchange "fixes the price to be offered for such staples bought or sold from the closing hour to the opening hour of the following day." Since the session of the Exchange is limited to four hours, these fixed "call prices" really control the bids of grain dealers for the remainder of the day, thus bringing about a situation which amounts to a combination having in view the prevention of competition, especially since the Exchange dominates the grain market in a large section of the country.

On Oct. 8 Judge Landis of the U. S. District Court ordered that a decree be given for the Government against the Board of Trade. It should be noted that following the institution of the suit the "call price" was discontinued by the Board of Trade. But it is contended by the Government that another rule has been substituted by the Board and that this rule also will be examined in the light of the decision handed down by Judge Landis.

A Clearing House for Commercial Organizations.—The establishment of a central bureau, to be known as the

Organization Service Bureau, has been undertaken by the Chamber of Commerce of the United States for the purpose of facilitating the distribution of information relating to the most effective methods of organizing and operating commercial and trade organizations. It is proposed that the Bureau shall be assisted by a Special Advisory Committee consisting of commercial secretaries and business men. A bulletin service will be conducted for the benefit of commercial secretaries. It is also proposed to have the Bureau study the various forms of organization of commercial bodies throughout the United States, the several methods of recruiting and holding members, the powers and duties of committees, and the method of financing and maintaining commercial organizations. (See also VII, *Municipal Organizations.*)

Plans to Meet European Competition after the War.—Steps were taken by the National Foreign Trade Council at its second annual meeting to prepare this nation to meet the European competition which is confidently expected to become extremely active after the war. The purpose of the council, as explained in the last issue (p. 340), is to coördinate the nation's foreign-trade activities in an aggressive and systematic extension of American over-sea commerce. In accord with this object, the entire second session was given over to a discussion of plans which would enable our commerce and industry to meet the new conditions which are believed will confront us after the war. The principal feature of the meeting was the report of the committee on the tariff, which concludes that our tariff system should be flexible with a view to enabling the Government to negotiate trade agreements which will secure tariff advantages to American producers.

Railway Steamship Lines on the Great Lakes.—In May the Interstate Commerce Commission ruled that the railroads operating steamship lines on the Great Lakes (viz., the Erie, Pennsylvania, Lehigh Valley, New York Central, and Delaware, Lackawanna & Western) must cease their connection with such lines. This ruling is the outgrowth of that section of the Panama Canal Act of Aug. 24, 1912, which provides:

> From and after the first day of July, 1914, it shall be unlawful for any railroad company or other common carrier subject to the Act to Regulate Commerce to own, lease, operate, control or have any interest whatsoever (by stock ownership or otherwise, either directly, indirectly, through any holding company, or by stockholders or directors in common, or in any other manner) in any common carrier by water operated through the Panama Canal or elsewhere, with which said railroad or other carrier aforesaid does or may compete for traffic or any vessel carrying freight or passengers upon said water route or elsewhere with which said railroad or other carrier aforesaid does or may compete for traffic, etc.

In applying this section to the aforementioned lines the Commission concluded:

> None of the several existing specified services by water is being operated in the interest of the public or is of advantage to the convenience or commerce of the people within the meaning of the Act, and that an extension [of time] of the respective interests of the petitioners therein will prevent, exclude and reduce competition on the Great Lakes.

Leading Anti-trust Cases.—The year witnessed the rendering of six important so-called anti-trust decisions, in addition to the Chicago Board of Trade case, all of which will have a far-reaching effect upon the business community. While most decisions of this character in the past have been decided in favor of the Government, this is true of only one of the cases rendered in 1915. Briefly summarized, these decisions are the following:

(1) The unanimous decision by the U. S. District Court at New York early in February dismissing the Government's anti-trust suit for the dissolution of (1) the lines comprising the Brazilian Steamship Conference and (2) those composing the Far-Eastern Steamship Conference. The reasoning and conclusions of the court are similar to those followed in the North Atlantic Conference case, decided about four months previously (*A. Y. B.*, 1914, p. 341). In both cases the Court found that the war had practically dissolved the combination under consideration, thus rendering the contentions of the Gov-

ernment largely academic; that the charge of excessive rates had not been shown; and that "in the mere initiation and carrying-out of the enterprise outlined we see no unreasonable or abnormal restraint of trade," likewise "whatever restraints may have resulted from the defendant's combination and conduct are merely the usual normal and reasonable restraints against which it has been held that the Sherman Act is not directed." In October the Government appealed the North Atlantic Passenger Conference case to the U. S. Supreme Court.

(2) The decision of the District of Columbia Supreme Court at Washington, holding that the Underwriters Association of the District of Columbia is not operating in violation of either the Sherman Anti-trust Act or the Clayton Act, on the ground that the issuing of a policy of insurance is not a transaction of commerce within the meaning of the clause of the Constitution, which provides that Congress shall have the power to regulate commerce with foreign nations and among the several states. As the court states,

> there is nothing in the Sherman Act or the supplements thereto, approved Oct. 15, 1914, which indicates that the words "trade or commerce" were used as applying to transactions other than those which Congress has power to regulate under the provisions of the Constitution above referred to; consequently those acts cannot be held to apply to the business of fire insurance in the District of Columbia.

(3) The unanimous decision by the U. S. District Court at Trenton, N. J., early in June, holding that the U. S. Steel Corporation is not operating in violation of the Sherman Anti-trust Act. The ruling, although coming from a lower court, has been regarded as of great importance, in that the Court has given its approval of the business methods of the largest corporation in the country. The case has therefore been frequently referred to as showing the tendency on the part of the courts to protect large business interests if they do not violate the anti-trust law when interpreted in the light of the "rule of reason," as laid down by the U. S. Supreme Court. The case, it may be added, has been appealed by the Government to the U. S. Supreme Court.

(4) The decision by the U. S. District Court in New York on July 21, in the case of the Great Atlantic & Pacific Tea Co. *v.* Cream of Wheat Co. Importance attaches to the case in that it is the first to apply Section 2 of the Clayton Act, which makes it unlawful for any person

> engaged in commerce to either directly or indirectly discriminate in price between different purchasers of commodities . . . where the effect of such discrimination may be to substantially lessen competition or tend to create a monopoly in any line of commerce; provided that nothing contained [in the Act] shall prevent discrimination in price between purchasers of commodities on account of differences in the grade, quality or quantity of the commodity sold, or that makes only due allowance for difference in the cost of selling or transportation or discrimination in price in the same or different communities made in good faith to meet competition; and provided further that nothing contained [in the Act] shall prevent persons engaged in selling goods, wares or merchandise in commerce in selecting their own customers in bona fide transactions and not in restraint of trade.

The Great Atlantic & Pacific Tea Co., the plaintiff, claimed that it had for years purchased heavily from the defendant and had had satisfactory business relations with it. Its business, comprising more than 1,000 stores, was so organized as to enable it to buy as wholesaler and sell like a large retailer. Owing to the decision of the U. S. Supreme Court in the Dick, R. H. Macy & Co., and other cases, relating to cut prices, the Cream of Wheat Co. held itself out in printed circulars as selling only to wholesalers and as refusing to sell to consumers, retailers, or chain or department stores. Notwithstanding the published sales plan, the defendant, although knowing that the plaintiff sold directly to consumers, sold cream of wheat to the plaintiff at wholesale rates upon condition that in making sales over the counter no smaller price should be charged than the small retailers had to ask in order to get a fair profit, viz., not less than 14 cents per package. Early in 1915 the plaintiff refused any longer to observe this agreement or request and openly sold cream of

wheat at its stores for 12 cents per package.

In his opinion, Judge Hough calls attention to the fact that in the Dick, R. H. Macy & Co., and other cases, relating to cut prices, the decision turned upon questions of copyright, patents and considerations not involved in this case. Here the article was described as "not one of necessity, is not patented, any one can make it who can get middlings, and the amount of the material annually required by the business of defendants is less than one per cent. of the amount produced by the millers of the United States." The Court therefore held in part (see also IX, *Law and Jurisprudence*):

> Section 2 plainly identifies the lessening of competition with restraint of trade (*cf.* the body of the section with the last exception). But price discrimination is only forbidden when it "substantially" lessens competition. Construing the whole section together, the last exception reads in effect that a "vendor may select his own bona fide customers providing the effect of such selection is not to substantially and unreasonably restrain trade.
>
> How it can be called substantial and unreasonable restraint of trade to refuse to deal with a man who avowedly is to use his dealing to injure the vendor; when said vendor makes and sells only such an advertisement-begotten article as Cream of Wheat, whose fancy name needs the nursing of carefully handled sales to maintain an output of trifling moment in the food market, is beyond my comprehension.

(5) The decision of the U. S. Supreme Court, in June, in the suit of the Government against the Delaware, Lackawanna & Western Railroad Co. The case, decided against the railroad company, involved the application of the "commodities clause" of the Hepburn Act, which prohibits any railroad from carrying across a state line any article or commodity owned wholly or partly by itself, unless said article is necessary or intended for its own use as a carrier. To meet the situation the railroad company in this case organized a coal company with a title similar to its own to take over its hard-coal holdings. Facts showed, however, that this new company was owned by the individual stockholders of the railroad. Justice Lamar holds, in his opinion, that it is the purpose of the "commodities clause" to prohibit railroads from "occupying the dual and inconsistent positions of public carrier and private shipper." The opinion questions the good faith of the contract arrangement between the old and new companies, and practically regards the contract with the new company as "amounting to a sales agency." (See also XX, *Railroads.*)

(6) The decision of the U. S. District Court at Philadelphia in the suit brought by the Government against the Reading Company and its allied companies, the Philadelphia & Reading Railway and the Reading Coal and Iron Co., holding that the companies have not violated either the Sherman Anti-trust Act or the "commodities clause" of the Interstate Commerce Act. The court held the Philadelphia & Reading Railway and the Reading Coal & Iron Co. to be distinct and separate companies, whereas in the Lackawanna case the decision turned upon the fact that the Supreme Court ruled that the Lackawanna Railroad, the original owner of the coal, retained an interest therein, and as a consequence was prohibited from also transporting the coal. Contrasted with this situation the railway company in the Reading case was regarded as never having owned coal, nor as having any interest therein at present.

XIV. PUBLIC FINANCE, BANKING, AND INSURANCE

PUBLIC FINANCE

C. C. WILLIAMSON

FEDERAL FINANCE

Appropriations of Congress.—The grand total of regular, miscellaneous, and permanent appropriations for the fiscal year 1915-1916 amounts to $1,115,121,408. The total estimates submitted to Congress by the Secretary of the Treasury on Dec. 7, 1914, amounted to $1,090,755,134, or $3,392,962 less than the appropriations for 1914-1915. Supplemental estimates submitted during the session, however, brought the total up to $1,135,187,984. It appears, moreover, that even this figure should have been increased by an addition of $27,774,450 in the Post Office estimates. The Postmaster-General's estimate of $297,355,164, or $9,597,953 less than the appropriation for the year 1914-1915, was based on the assumption that Congress would enact legislation which he recommended with a view to effecting large economies, particularly in the rural free delivery service. These recommendations Congress refused to accept, with the result that the Post Office Appropriation bill failed of enactment, as did also the Indian Appropriation bill. Had the reports of the conference committees on these two bills been accepted, the total appropriations for 1915-1916 would have amounted to $1,127,711,776. To meet the emergency caused by the failure of these two supply bills, a joint resolution was passed during the closing hours of final session of the Sixty-third Congress, continuing in force the appropriations of 1914-1915. The appropriation in this way of $313,000,000 instead of $325,000,000 for the postal service will necessitate the passage of a deficiency act in the Sixty-fourth Congress. (See also V, *The National Government.*)

Receipts and Expenditures.—The following table shows the ordinary receipts and expenditures, and the financial transactions of the Panama Canal, for the fiscal years ending June 30, 1914, and June 30, 1915, in millions of dollars:

	1914	1915
ORDINARY RECEIPTS		
Customs	292	209
Internal revenue:		
Ordinary	309	336
Corporation excise	11	....
Corporation income tax	32	39
Individual income tax	28	41
Miscellaneous	62	71
Total	734	696
ORDINARY EXPENDITURES		
Civil and Miscellaneous	181	248
War	124	127
Navy	140	142
Indians	20	22
Pensions	173	164
Postal deficiency	....	7[1]
Interest on public debt	23	23
Total	701	733
Less unexpended balances repaid	1	2
Net ordinary disbursements	700	731
Excess of ordinary receipts over ordinary expenditures	34	....
Excess of ordinary expenditures over ordinary receipts	....	35
Balance in General Fund at close of year	146	82
PANAMA CANAL STATEMENT		
Expenditures	39	29

Total expended to June 30, 1915	$382,252,644
From General Fund	219,471,636
From Panama Canal bonds	138,600,869
Total Panama Canal bonds authorized by law	375,200,980
Total of bonds issued to date	134,631,980

[1] Pay warrants drawn on account of postal deficiency for the year ending June 30 amount to $6,636,593, as reported in the Treasury statement for June 30. The actual audited deficit of the Postal Service was $11,333,309.

Internal Revenue.—The Commissioner of Internal Revenue reports the

largest receipts in the history of the Bureau, the increase over 1914 being $35,660,982. This sum, however, includes an increase of $8,809,420 in the receipts from the income tax (including the corporation excise tax), $52,069,126 of emergency revenue collected under the War Revenue Act of Oct. 22, 1914, and $248,406 collected from the special tax on manufacturers, importers, or distributors of opium, under the anti-narcotic law of Dec. 17, 1914 (see I, *American History*).

War Revenue Tax.—The revenue collected under the War Revenue Act (*A. Y. B.*, 1914, p. 346) fell short less than two million of the $54,000,000, which it was estimated it would yield for 1914-1915. The Act was to expire on Dec. 31, 1915, but on Dec. 17 the President approved a joint resolution extending it for another year. The following table shows in detail the collections for the year ending June 30, 1915:

Wines, champagne, liqueurs, cordials, etc	$2,307,301.97
Grape brandy used in fortification of sweet wines	138,383.56
Fermented liquors (additional 50 cents per barrel)	18,713,679.88
Special taxes relating to manufacture and sale of tobacco, cigars, and cigarettes	2,486,616.36
Special taxes, including bankers, brokers, etc	4,967,179.18
Schedule A (documentary stamps, etc.)	20,494,474.75
Schedule B (perfumery, cosmetics, etc.)	2,961,490.59
Total	$52,069,126.29

Income Tax Receipts.—Collections from the corporation income tax show a decrease of $3,983,211, while from the individual income tax an increase of $12,792,631 occurred. In making the comparison, however, it should be remembered that the revenue from individual income tax collected in the fiscal year 1913-1914 was levied on incomes for ten months only, i. e., March 1 to Dec. 31, 1914, while collections in 1914-1915 were from the incomes of the calendar year, 1914. Still, after making allowance for the longer period, the individual income tax shows a considerably increased yield; it is, in fact, the only important source of revenue which has not been more or less seriously diminished by the European War.

Most of the increase occurred in the receipts from the "additional" tax on incomes exceeding $20,000. The following table shows the collections for each class of incomes, in thousands of dollars:

	Rate, Per Cent.	1913–14	1914–15
Normal tax	1	$12,728	$16,560
Additional tax on net incomes of:			
$20,000 to $50,000	1	2,935	4,107
50,000 to 75,000	2	1,646	2,501
75,000 to 100,000	3	1,323	2,103
100,000 to 250,000	4	3,836	5,945
250,000 to 500,000	5	2,335	3,328
Exceeding 500,000	6	3,438	6,439
Received in compromise, etc	...	14	63
Total	...	$28,254	$41,046

Public Debt.—The following is a statement of the public debt of the United States as of June 30, 1915:

Interest-bearing debt:	
2s, Consols of 1930	$646,250,150
3s, Loan of 1908–1918	63,945,460
4s, Loan of 1925	118,489,900
2s, Panama Canal Loan, 1906	54,631,980
2s, Panama Canal Loan, 1908	30,000,000
3s, Panama Canal Loan, 1911	50,000,000
2½s, Postal Savings Bonds, 1911–1914	5,508,060
2½s, Postal Savings Bonds, 1915	933,540
Debt bearing no interest:	
United States notes (greenbacks)	346,681,016
National bank notes (redemption account)	19,390,345
Old demand notes	53,153
Fractional currency	6,850,240
Debt on which interest has ceased:	
Funded loans of 1891	27,650
Loan of 1904	13,050
Funded loan of 1907	552,350
Refunding certificates	12,590
Old debt	901,620
Certificates and notes issued on deposits of coin and bullion:	
Gold certificates	1,217,882,769
Silver certificates	493,459,000
Treasury notes of 1890	2,254,000
Total interest-bearing debt	969,759,090
Total debt on which interest has ceased	1,507,260
Total debt bearing no interest	372,974,754
Total interest and non-interest bearing debt, June 30, 1915	1,344,241,104
Certificates and Treasury Notes.	1,713,595,769
Gross debt	3,057,836,873
Cash in Treasury:	
Currency trust funds	1,713,595,769
Gold reserve fund	152,977,037
Net balance in General Fund.	82,025,716
National bank notes	19,390,346
Total cash in Treasury	1,967,988,868
Net debt, June 30, 1915	1,089,848,006

The Treasury Deficit. — Receipts from all sources during the fiscal year 1915 were estimated in September, 1914, as follows:

From customs	$249,000,000
Ordinary internal revenue	305,000,000
Corporation and income tax	122,000,000
Miscellaneous	60,000,000
Total	$736,000,000

At the same date the probable net ordinary expenditures were estimated at $718,000,000. Customs receipts fell $40,000,000 below the estimate. Revenue from every other important source, except the individual income tax, also fell far below the estimate. At the same time expenditures exceeded the estimate slightly, so that the year closed with an excess of ordinary expenditures over ordinary receipts of 35 millions. Month by month this deficit was as follows:

	Deficit	Cash Balance in General Fund, End of Month
1914:		
July	$2,419,968	$143,776,800
August	22,270,763	121,500,400
September	9,482,196	112,204,309
October	20,564,333	91,639,975
November	18,138,132	73,501,843
December	6,731,169	66,770,674
1915:		
January	9,750,085	57,020,589
February	14,694,631	42,636,065
March	6,866,454	35,769,611
April	14,954,076	20,815,534
May	5,819,477	14,996,057
June	[1]67,029,658	82,025,716
July	16,171,257	68,173,462
August	14,858,434	53,355,444
September[2]	12,456,549	40,898,894

[1] Excess of ordinary receipts over ordinary expenditures.

[2] Gradual depletion of the balance in the General Fund continued through December, but beginning with Oct. 1 Secretary McAdoo so changed the form of the daily Treasury statement that it is difficult to give figures which are strictly comparable with those recorded for earlier months.

Towards the middle of the year the question was much discussed in financial circles as to whether the Treasury could make ends meet until the latter part of June, when it was estimated that approximately $80,000,000 would be received from the corporation and individual income taxes. As the table shows, the available cash balance in the Treasury was indeed seriously depleted before the heavy collections came in at the end of June. The cash balance in the General Fund as reported from day to day is, as a matter of fact, considerably in excess of the actual balance available for paying the current expenses of the Government. To get at the true condition of the Treasury at the close of the year, as regards its ability to meet current obligations it would be necessary to deduct the following items from the net balance in the General Fund:

Subsidiary silver coin	$26,397,048
Minor coin (nickels and cents)	2,838,268
Silver bullion (available for subsidiary coinage)	4,268,320
Total	$33,503,636

New Sources of Revenue.—During the last quarter of the year, the cash balance in the General Fund shows a still further reduction, a condition which will, in all probability, continue as long as the war lasts, unless additional sources of revenue are secured. With the Administration pledged to a programme calling for large expenditure for national defense, it is evident that the Sixty-fourth Congress will be compelled to take up at once financial legislation both to tide over the existing emergency and to provide for enlarged expenditures.

It has been assumed from the beginning of the war that whenever the Treasury began to feel the need of the money Panama Canal bonds would be sold. Congress has authorized $240,569,000 more than have been issued, a large part of the cost of the Canal having been paid from ordinary revenues. In an emergency the Secretary of the Treasury could sell also one-year three per cent. certificates of indebtedness. While an issue of bonds or a sale of notes might safely be resorted to in order to tide over a sudden emergency, it was apparent that increased taxation of some sort would be required. On Nov. 25, Secretary McAdoo issued a statement recommending that Congress provide current revenues sufficient to cover all present and proposed expenditures, including the Panama Canal, and President Wilson made the same recommendation in his annual message of Dec. 7. The sources of revenue suggested are the extension of the War Revenue Act, the lowering of the exemption limits of the income tax and increasing the

surtax, the restoration of the tariff on sugar, and the laying of new internal-revenue taxes on gasoline, automobiles and internal-combustion engines, bank checks, pig iron and fabricated iron and steel. (See also I, *American History.)*

The Tariff.—There seems to be no reason to doubt that the check on imports caused by the European War has been the sole cause of a shrinkage in customs of even greater proportions than was anticipated. Collections reached only $209,268,107, which was the smallest amount received from this source since 1899. The opponents of the Underwood tariff claim that the falling off must be due to the lower rates of duty. This contention is effectually disposed of, however, by the fact that in its first year the Underwood tariff produced $292,000,000, or $22,000,000 more than was anticipated, and even in 1914-1915 only $11,000,000 less than the estimate. In considering the effect of the war on our revenue it is pertinent to point out that had the Payne-Aldrich tariff still been in force, the shrinkage in our import trade would have had far more serious effect on the Treasury.

The advocates of a protective tariff have adopted for the coming Presidential campaign the slogan, "After the war the deluge." They argue that the war has so far saved the country from the evils of free trade by keeping out foreign goods and giving our manufacturers large orders for war material. The war, in other words, has had the same effect as a high tariff, and by the prosperity which it has created in this country has proved the advantage of the protective policy. Hence they demand a return to protection to save our industries from destruction when the war is over and foreign countries, curtailing their own purchases abroad and striving to recapture their old markets and open up new ones, make of this country a dumping ground for the products of their cheap labor. The Utopian idea of a permanent commission to "take the tariff out of politics" is also being exploited as a means of repelling the "industrial invasion" which is "sure to follow the war." A Tariff Commission League has been organized and the Chamber of Commerce of the United States has launched a campaign to show the need of such a commission to ascertain facts as a basis of legislation.

The Federal Budget.—Reform in the budgetary procedure of the Government, which was urged with so much earnestness and so little success by President Taft, is still neglected. On Feb. 5 the Chamber of Commerce of the United States, acting on a recommendation of the Association of Commerce of Chicago, went on record as reaffirming its approval of a national budget and urging upon Congress the necessity of "great improvements in present methods of preparing and publishing estimates both of expenditures and revenue." It is to be hoped that falling revenues and increasing expenditures may bring Congress to realize the need for reform. A budget committee of the Democratic caucus, of which Mr. Sherley of Kentucky is chairman, has had the matter under consideration, but up to the opening of Congress was not able to present a plan which could be applied to the appropriations of the first session of the Sixty-fourth Congress. The underlying difficulty in persuading Congress to adopt any budget system is that a change would necessarily involve some sacrifice of power by existing committees.

Constitutionality and Defects of the Income Tax Law.—The constitutionality of the income-tax law has been questioned in several cases now before the U. S. Supreme Court. A brief in defense of the act was filed by the Attorney-General on Oct. 12 and hearings in five of the cases were begun on Oct. 13. The grounds upon which the attacks are made are many, but there is little reason to suppose that the law is in danger of being found unconstitutional. While the defects pointed out in these cases probably do not affect the validity of the law, many of them are serious enough to cause widespread demand for the enactment of several amendments. A committee on the federal income tax of the National Tax Association has submitted a report embodying 17 recommendations designed to simplify the law and make it work more equitably.

STATE AND LOCAL FINANCE

The legislatures of 46 states held regular or special sessions during 1915 and in nearly all of them new laws or amendments to old laws were passed effecting changes in the tax system. As usual, much of this legislation is concerned merely with details. The more important changes are reviewed in the following paragraphs.

Increase of Expenditures.—In many states attention has been called to the rapid increase of expenditures and debts in recent years. Reports of the Census Bureau on "Wealth, Debt and Taxation," published during the year, show that between 1903 and 1913 the revenues of the Federal Government increased 45 per cent., while its expenditures for governmental cost increased by 54.5 per cent. During the same period the revenues of the states increased by 94.5 per cent. and their expenditures for governmental cost by 105.9 per cent.; the revenues of the counties increased by 85.8 and their expenditures by 95.2 per cent., and the revenues of incorporated places of 8,000 and over increased by 98.3 per cent. and their expenditures by 103.2 per cent. For every division of government the increase in expenditure was greater than the increase in revenue.

State Budget Reform.—The recent alarming increase of expenditures has called attention in a number of states to the lack of a proper budget system for harmonizing revenues and expenses (see also VI, *State Administration*). The New York State Constitutional Convention gave special consideration to the matter of budgetary procedure and submitted a plan which, although temporarily defeated in New York, will undoubtedly be revived and will probably serve as a model for other states. Under the plan proposed all departments except the legislative and judiciary were required to submit to the governor by Nov. 15 itemized estimates of their financial needs for the following year in such form as he might prescribe. After public hearings on these estimates the governor could revise them according to his judgment. Estimates for the legislature and judiciary were also to be submitted to the governor by Jan. 15, and included in the budget without revision, although he could make recommendations. Not later than Feb. 1 he must then submit to the legislature an itemized budget containing all proposed expenditures and estimated revenues, together with appropriation bills, taxation measures proposed, and other data relating to fiscal conditions and expenditures for the two years preceding. During the consideration of the budget the governor and heads of departments were given the right and the duty of appearing before the legislature, which could strike out and reduce items, but not increase any except those for its own support and for the judiciary. Not until after the appropriation bills proposed by the governor had been acted upon by both houses could the legislature consider any further appropriations, and then only in the form of separate bills each for a single object and subject to the governor's approval. In the campaign against the proposed constitution, which was overwhelmingly defeated at the polls, the budget section was subjected to special attack on the ground that it concentrated too much power in the hands of the governor. For this reason it is especially interesting to note in the following review of budgetary legislation in other states that in a number of instances state legislatures have in 1915 given to the governor powers substantially the same as provided in the defeated New York constitution.

In Connecticut a modern budget system was established (Ch. 302) by the creation of a State Board of Finance composed of three electors appointed by the governor for six-year terms, acting with the treasurer, comptroller and tax commissioner, *ex officio*. To this Board all departments, boards and institutions supported by the state are required to submit itemized estimates of the money needed. The Board is to hold hearings on these estimates and report its recommendations to the General Assembly. A joint standing committee on appropriations, consisting of two senators and five representatives, is to be appointed at each regular biennial session. All bills and

resolutions requiring appropriations must be referred to this committee unless this requirement is set aside by a two-thirds vote of each house. This committee and the Board of Finance are required to hold joint meetings and hearings during sessions of the legislature and to take some action within two weeks after a hearing. The Board and the committee are specifically empowered to originate and report such bills and resolutions as they deem necessary.

In North Dakota also a State Budget board was created (House Bill 484. Approved March 4, 1915). It is composed of five members, the governor, who is also chairman, the chairmen of the appropriation committees of the two houses of the preceding legislature, the attorney-general, and the state auditor, who acts as secretary. Not later than the first of August of the year preceding a legislative session, the auditor is required to send to the head of every department and institution receiving public money blank forms for itemized estimates which are to be returned with explanatory data on or before Oct. 1. The budget board must then meet on the third Tuesday of November to examine the estimates and hold public hearings on them. It may employ expert accountants. Its recommendations are to be made to the legislature not later than the tenth day of the session. At the same time it must transmit an estimate of revenues for the next biennial period.

In Washington an act (Ch. 126) provides for a State Board of Finance composed of the governor, auditor, and treasurer. On or before Oct. 15 the heads of departments and institutions are to submit to the Board an itemized estimate of money required for the biennial period beginning the following April 1. With full power to make investigations and examine departments and offices, the Board is required to recommend to the legislature a budget which is to be printed and copies mailed to the members at least 15 days before it convenes.

A Minnesota law (Ch. 356) requires every officer, board, commission and institution expending public money to prepare estimates in accordance with prescribed forms and submit them to the governor, who revises them in consultation with the chief executive officers and prepares a budget.

The governor is also made the chief budget officer by a 1915 act in Nebraska (Ch. 229). It becomes his duty to prepare and transmit to the legislature at the opening of the legislative session a detailed and summarized estimate of the revenues and expenditures for the ensuing biennial period, with a brief statement of reasons for any change recommended. The budget must also show the total assessed valuation of property, the public debt, and receipts and expenditures for the preceding biennium. In its preparation every officer in the state is required to assist if called upon by the governor. The budget message is to be printed and supplied to the legislature, to the press, and to citizens on written application.

A budget system for Vermont is provided in an act (No. 26) to create a Committee on Budget, consisting of the governor (chairman), auditor of accounts (secretary), state treasurer, chairman of the finance committee of the Senate, chairman of the ways and means committee of the House (or a member of those committees designated by the chairman) and the state purchasing agent. During October state departments, institutions, etc., requiring appropriations file with the secretary of the Committee, on prescribed forms, detailed statements of appropriations and expenditures for the current and the two preceding fiscal periods, together with the amounts required in the ensuing biennium. Individuals, institutions, and associations desiring appropriations, as well as persons with claims against the state, must present their applications to the secretary of the Committee before applying to the legislature. After holding public hearings and making such investigations as are necessary, the Committee during November prepares a detailed estimate of revenues and expenses which is printed and sent to each member of the legislature and to every town clerk in the state. A new committee of the incoming legislature then receives these estimates, makes

such revision as seems desirable and prepares one consolidated appropriation bill. The Committee on Budget is required to meet in the capital at least once every six months to examine into the financial condition of state institutions and departments and in general to see that the budget is enforced. In the case of unforeseen emergencies the Committee may make expenditures and pledge the credit of the state.

A Nevada act (Ch. 153, Sec. 8) requires the State Board of Examiners to prepare and file with the tax commission on or before the first of May a detailed budget estimate of expenses of the government for the current year. In Maine an amendment (Ch. 49) to an act of 1911 (Ch. 145) relates to the filing of requests for appropriations.

Tax Commissions.—In South Carolina the State Board of Equalization and the State Board of Assessors were abolished (Act No. 99) and their duties bestowed upon a permanent Tax Commission with broad powers of supervision over the administration of the tax laws and the work of local tax officials. It assesses public-service corporations and can order reassessment of other property. The Commission consists of three members appointed by the governor, subject to confirmation by the Senate, for terms of six years. The members are to be persons "known to possess knowledge of the subject of taxation and skill in matters pertaining thereto." Experts and other assistants may be employed.

The Idaho act of 1913 (*A. Y. B.*, 1913, p. 358) was repealed (Ch. 30). Property of public-service corporations is to be taxed by the State Board of Equalization. In Montana also the commission created by the legislature in 1913 (*A. Y. B.*, 1913, p. 358) was abolished (Ch. 67). A commission of the same *ex officio* type is provided in Nevada (Ch. 153) to take the place of a commission of three members created in 1913, two of which were appointed by the governor. It consists of the governor, as chairman, the three railroad commissioners, and one member to be appointed by the railroad board, who acts as secretary. The latter is required to "possess practical knowledge and experience" in the classification and value of land and live stock. Powers and duties conferred upon the commission are broad, but it is not clear what is meant by various provisions of the act. On the whole it does not seem probable that a commission of this type can be efficient.

Although of the appointive type, a commission established during the year in New Mexico (Ch. 54) appears also to be unlikely to attain a high standard of administrative efficiency. The five members, appointed by the governor and confirmed by the Senate, must each be a taxpayer, a representative of one of the principal industries, and a resident for five years. Not more than one may come from the same judicial district and not more than three may belong to the same political party. The term is two years. The commission is required to value the property of railroads, telegraph, telephone, express, sleeping-car, and transmission companies. It is also to determine the value of shares of banks and trust companies and the actual value of cattle, horses, sheep, goats and other live stock in different sections of the state. The commission may order assessments corrected, equalizes property between counties, and hears appeals from county boards of equalization. The state is divided into five districts, each of which must be visited by one commissioner to hear appeals. He then reports to the commission which makes the final decision.

A State Advisory Board on Taxation established by the extra session of the Virginia legislature (Ch. 116) is essentially an *ex officio* tax commission. It consists of the governor (chairman), the auditor of public accounts (secretary), and the chairman of the state corporation commission, all serving without compensation. Its duty is (1) to "collect, digest and preserve information relating to the assessment and collection of taxes in the state and to ascertain the best methods of effecting equitable assessments, and of avoiding duplication of taxation on the same property," and make recommendations to the General Assembly; and (2) to "exercise general advisory

powers over the local boards of review and over the assessors and commissioners of revenue." The local boards of review created by the same act are composed of three members for each county and city, appointed by the courts. They are to sit to hear complaints, to correct assessments, and to order the assessment of any property omitted, and may themselves raise or lower assessments.

A State Board of Taxes and Assessment has been formed (Ch. 244) in New Jersey by the consolidation of the Board of Equalization of taxes and the State Board of Assessors. It consists of five members, holding office for three years, not more than three of whom may belong to one political party and one must be a lawyer.

An amendment to the Oregon laws (Ch. 198) requires assessors and tax collectors to submit to the tax commissioner all questions which affect the construction of tax and revenue laws. The powers of the South Dakota commission have been increased (Ch. 298). A constitutional amendment abolishing the State Board of Equalization and providing for a permanent Tax Commission was submitted in California, and defeated.

The appointment of special commissions continues to be the favorite method of approach to tax reform and improvement of state tax systems. Several such commissions are provided for by 1915 legislation. In Indiana a special commission (Ch. 114) of five persons to serve without compensation is to consider what changes in the constitution and laws are needed to make a just and equitable tax system. Tax reform in other states is to be investigated through printed reports and the testimony of experts. A report must be made not later than Jan. 1, 1917. A special commission provided in Massachusetts (Ch. 134) is to sit after adjournment of the legislature and investigate the advisability and necessity of changes in the tax laws. It is specifically required to draft a law taxing incomes under power granted in a constitutional amendment adopted at the general election of November, 1915. A printed report is to be submitted not later than the first Wednesday of January, 1916. In Tennessee a commission of six members was appointed by the governor to serve without compensation for the purpose of investigating the tax system and preparing a bill to create a permanent tax commission.

The New York Legislature provided a joint legislative committee of three senators and three members of the assembly, "to investigate generally in respect to systems and methods of taxation, particularly with regard to the best methods of equitably and effectually reaching all property which should be subjected to taxation and avoiding conflicts and duplication of taxation on the same property." A report is to be submitted to the legislature by Feb. 1, 1916. This committee has directed its efforts largely toward discovering substitutes for the personal-property tax and means of raising additional revenue both for state and local purposes. The income tax, the classified personal-property tax, and an "ability or presumptive income tax" are the measures most generally favored by those who testified before the committee. A second joint committee was provided by the New York legislature "to investigate and determine what legislation, if any, should be enacted to afford relief to the city of New York in relation to taxation for local or state purposes and . . . to increase the control of the city authorities over mandatory expenditures."

Permanent tax commissions now exist in more than 30 states. Most of them have been created in order to secure greater efficiency in assessment and administration of tax laws though centralization of responsibility in an appointive commission of experts. Ohio in 1913 carried centralization of tax administration further than had been attempted in any American state up to that time (*A. Y. B.*, 1913, p. 359). That act, the so-called Warnes law, has now been repealed (Act approved May 7, 1915). The state commission still has broad powers of supervision but local assessors are elected. District assessors, district boards of assessors and district boards of complaint are abolished and their duties assigned to county boards of revision and county

auditors. The latter, acting under the supervision and direction of the tax commission, are the chief assessing officers. They fix the pay of assessors, which is $3 to $6 a day while actually engaged in the work. When necessary to complete assessments on time the county auditor may appoint and remove at will assistant assessors, who are exempt from civil-service requirements. He may even remove the elected assessors "for want of moral character, inefficiency, incompetency, neglect or breach of duty or malfeasance in office." County boards of revision of three members are appointed, subject to approval by the Tax Commission, by a board composed of the county treasurer, prosecuting attorney, probate judge, and president of the county board of commissioners. Reassessment may be ordered by the Tax Commission.

In New York State a considerable degree of centralization of the tax machinery has been effected by an act (Ch. 317) abolishing the State Board of Tax Commissioners and creating a Tax Department to be headed by a State Tax Commission of three members appointed by the governor. The Commission is given general supervision of the assessment of property throughout the state, with the duty of instructing local assessors and other officials, prescribing forms for their use and examining their work. The Commission may on complaint review the equalization fixed by boards of supervisors or other officials and by application to the Supreme Court may secure a reassessment of property by local assessors. Most of the powers and duties formerly held by the comptroller in relation to the assessment of corporation taxes are transferred to the Tax Department.

In Nevada the tax commissioners are to sit with the county assessors as a State Board of Equalization. In spite of the spread of permanent tax commissions and separation of sources of revenue, however, need still seems to be felt for state boards of equalization. A constitutional amendment to be submitted in Montana in 1916 provides for the creation of both state and county boards of equalization. In Wyoming the state board of equalization has been given power (Ch. 119) to increase or decrease the assessed value of any class of property in any county.

Classification of Property.—The movement toward classification of property with a lower rate on certain classes, particularly on intangible personalty, continues as a means of obviating some of the grosser inequalities and absurdities of the general property tax under the constitutional requirements of uniformity. The legislature of Illinois (Senate Joint Res. No. 21) adopted a resolution submitting to the electors at the November election in 1917 a constitutional amendment giving to the general assembly unrestricted power over the taxation of personal property, provided that all exemptions must be by general law and revocable at any time, and that any tax on personal property must be uniform as to persons and property of the same class within the district in which it is imposed. A provision in practically the same form and having the same object was included as one of ten sections amending the tax article of the constitution of Utah, to be submitted to the voters in November, 1916. In California also the legislature submitted a classification amendment to the voters, which was defeated. In Massachusetts, where the question of classification has long been agitated without result, an unsuccessful effort was made to secure virtual classification in spite of the constitutional barrier. While in most states whose constitutions still require uniformity the tendency is to remove such restrictions, it is interesting to note that in Arkansas an amendment prohibiting classification of property, but permitting a graduated income tax was passed. It will not be voted on at the November, 1916, election, however, being excluded because the full number of acts and amendments which could be voted on had preceded it.

A constitutional amendment permitting the Kansas legislature to classify property for taxation was defeated at the polls in 1914. At every session of the legislature from 1907 to 1913 unsuccessful attempts had been made in Kansas to enact a mortgage-registration tax modeled on the New York law of 1906. In 1915 such

a law was finally passed. The act (Ch. 25, approved March 10, 1915) exempted from the ordinary personal-property tax all mortgages of real property on which had been paid a registration fee of 15 cents per annum for the full term of the loan on each $100 of the principal debt. On June 29 the Kansas Supreme Court handed down a decision declaring the law unconstitutional on the ground that it undertook to classify property for purposes of taxation contrary to the express command of the constitution. The constitutional provision, the court admitted, has outlived its usefulness and "now bars the pathway to an equitable system of taxation."

The Kentucky amendment of 1913 which in 1914 was declared invalid on a technicality (*A. Y. B.*, 1914, p. 349) was again adopted in 1915. The Iowa amendment failed to secure the required approval of the 1915 legislature.

The low-rate tax on intangible property was adopted in North Dakota. The act (Ch. 255) levies an annual tax of two mills on each dollar of fair cash value on money and credits, in lieu of all other taxation. In Connecticut a tax law on intangible property of somewhat novel form was passed. This law (Ch. 293) requires that at the time the inventory and appraisal of a decedent's estate is filed in the probate court, a statement shall also be filed showing on which items in the inventory a tax was assessed or paid during the year preceding the decedent's death. All property on which no such tax was paid becomes liable to a tax of two per cent. per annum for five years preceding the date of the decedent's death, although if it can be shown that the property paid any tax during the five-year period or that it had not been in the hands of the decedent, a proportionate reduction may be made in the back taxes. In order to avoid this penalty for non-payment of taxes the act gave permission until Sept. 30, 1915, to file with the state treasurer a list of property liable to taxation, on which no tax had been paid in the preceding five years, and to pay on it a tax of four mills per annum for five years. Much property hitherto untaxed has been revealed.

In Virginia a uniform rate of 65 cents on each $100 of assessed value is to be levied for state purposes (Ch. 117) on intangible personalty, except on money, and on bonds of Virginia counties, cities, towns, etc. An additional 30 cents per $100 may be levied by cities and counties. On bonds of Virginia counties, cities and towns, the rate of the state tax is 35 cents per $100, 10 cents of which is devoted to the support of schools, and on money the rate is 20 cents per $100.

Separation of Sources.—The low uniform rate on intangibles for state purposes is advocated not only for the sake of reaching much personal property which would otherwise escape, but also because it permits a separation of sources of state and local revenue. In Virginia the low uniform rate on intangible property referred to in the preceding section has been combined with a provision (Ch. 85) for separation of sources of state and local taxes. Real estate and tangible personal property, including the tangible personalty of public-service corporations (except rolling stock of steam railways) are made subject to local taxation alone, with the exception that the state tax for school purposes is continued. Insurance taxes and all taxes on intangible personal property and property not specifically mentioned are set aside for state purposes, although cities may levy on intangibles not to exceed 35 cents per $100; and county boards of supervisors may also levy a district road tax for construction and repair of roads. The quinquennial assessment of land is made in 1915 and it is expected that the next General Assembly will be able to effect a complete segregation.

Instead of relying on separate sources for state and local revenue it has long been contended that a state property tax could be retained without its attendant evil of underassessment if it were apportioned not on the local property valuation, but on some other basis, as on local expenditures. That method was adopted in Oregon a few years ago, but before the law went into effect it was repealed. Connecticut, therefore, by a 1915 act (Ch. 257) is the first state

to make this interesting experiment. State and county taxes imposed on towns are to be apportioned to the towns in the ratio which the average yearly revenue of the town and its subordinate taxing districts from direct taxation for the preceding three years bears to the total revenue for the same period in all towns of the state or county. The act originally forbade the state board of equalization to make any correction in the local assessments, but an amendment approved three days later (Ch. 309) permits such corrections when required for some purpose other than the raising of revenue as provided in Chapter 257.

"Secured-Debt" Taxes.—The New York "secured-debts" tax of 1911 (*A. Y. B.*, 1911, p. 295) extended the principle of the mortgage-recording tax to mortgages on real estate situated outside the state, bonds, etc., secured by such mortgages, and the state and municipal bonds of other states. By registering such securities and paying a tax of one-half of one per cent. they became exempt from the ordinary annual tax on personal property. The legislature of 1915 planned to increase the revenue from this tax by levying an annual tax on secured debts. To prevent registration of large amounts of securities in anticipation of an increased tax, the law of 1911 was suspended from April 1, 1915, to May 1, 1915 (Ch. 169). Bills were introduced providing an annual tax, but this plan was abandoned on account of opposition, and in its stead a measure regarded as temporary was passed (Ch. 465) providing a registration fee of three-fourths of one per cent. on "secured debts" registered after May 1 and before Nov. 1, 1915. Securities so taxed are exempt from other taxation for five years. Securities on which the former registration tax has been paid will continue to be exempt. The law also extends the definition of "secured debt" to include such proportion of a bond, note or debt secured by a mortgage on property situated partly within and partly without the state as the value of the property outside bears to the value of the entire mortgaged property.

The "secured-debt" law of Michigan, passed in 1913 (*A. Y. B.*, 1913, p. 354) has been extended (Ch. 254) to cover the bonds of states and municipalities outside of Michigan. The rate remains one-half of one per cent. The Massachusetts secured debts tax was amended (Ch. 135) so as not to interfere with the mortgage tax.

Exemption of Improvements.—The idea of exempting buildings and other improvements on real estate for purposes of social and economic reform has made no apparent progress during the year. Two noteworthy reports on the subject have been prepared by Dr. Robert Murray Haig and published by the Mayor's Committee on Taxation in New York City. The so-called "Houston plan" of taxation has been declared by the Texas Court of Civil Appeals to be unconstitutional. Although the constitution of Texas requires that "taxation shall be equal and uniform," since 1911 the officials of Houston, without legal authority, have exempted entirely money, stocks, bonds, and similar intangible personal property, and have assessed land at 70 per cent. of its full value, improvements on land at 25 per cent. and stocks of merchandise at 50 per cent. of true value.

An act repealing the Pennsylvania "graded-tax" law of 1913, reducing the assessment on buildings in Pittsburgh and Scranton, was vetoed by the governor. By a 1915 law (No. 346) Pennsylvania has provided that machinery and tools shall not be included in the valuation of real estate in first-class cities (Philadelphia). A similar provision for the second-class cities (Pittsburgh and Scranton) was enacted in 1911 (*A. Y. B.*, 1911, p. 300). Machinery in Pennsylvania is not taxable as personal property, so that in the three largest cities of the state machinery and stocks of manufacturers are now exempt. In other parts of the state machinery can be taxed as real estate, but in practice usually escapes. In practically every one of the 46 states some change has been made or proposed by statute or constitutional amendments in the list of tax-exempt property.

Taxation of Corporations.—The gross-earnings tax applied by the Connecticut legislature in 1913 (*A. Y. B.*,

1913, p. 356) to telephone, telegraph and car companies has been in 1915 extended to all other corporations (Ch. 292). The rate for steam and electric railroads is 3½ per cent. and for street railways 4½ per cent. of their gross earnings, in lieu of all other state taxes. For water, gas, and electric companies the rate is 1½ per cent. Stock insurance companies pay one-half of one per cent. on the market value of their shares. All other corporations doing business in the state, except those mentioned, and excepting express companies and banks and trust companies, pay a tax of two per cent. on their net income. The Pennsylvania tax on capital stock of corporations has been recast (Act No. 336), the principal change effected making the tax year coincide with the calendar year instead of ending with the first Monday of November. The second extraordinary session of the West Virginia legislature levied an excise tax (Ch. 3) for the privilege of doing business in the state on all corporations organized for profit. The act is modeled on the Federal income-tax law. The rate is one-half of one per cent. on net income of all kinds of business transacted and capital invested in the state. This act also increases the charter tax on both resident and non-resident domestic corporations.

The extra session of the Virginia legislature called to revise the tax code made a number of minor changes in the taxation of public-service corporations (Ch. 24, 80, 88, and 141). An Arkansas act (No. 224) requires car companies of all kinds, except railroad companies owning dining, parlor and sleeping cars, to pay the same rate on their assessed valuation as is paid by other property in the state. The rates of the gross-earnings tax on corporations in California have been changed somewhat by a 1915 act (Ch. 2). In Utah some of the rates of the annual state license tax on corporations have been increased (Ch. 42). A Vermont law (No. 56) makes a change in the rates levied on express companies. Changes are made in the method of assessing insurance companies in Montana (Ch. 64), and of telephone and telegraph companies in Ohio.

Another Connecticut act (Ch. 301) taxes in a special way the savings deposits of national banks. National banks having savings departments are required to furnish lists of depositors with the amount on deposit by each. Individuals who in this way are shown to have failed to list all of their deposits are liable to a penalty of 10 per cent. The banks may, however, on or before Oct. 10, 1915, and annually thereafter during the month of September, elect to pay a tax of one-quarter of one per cent. on their savings deposits as of Oct. 1 preceding. Depositors are not required to list deposits in banks which pay this tax. With few exceptions all national banks in the state elected to bear the tax in 1915.

Income Taxes.—The Oklahoma income-tax law of 1910, on account of defective administrative provisions, has never produced much revenue. It has now been repealed and in its place the legislature has passed an act (Ch. 164) based on the Federal law. It levies an annual tax on net incomes from all sources, including income from property owned or business carried on in the state by persons residing elsewhere. Deductions permitted are practically the same as in the Federal law. The exemption is $3,000, with an additional $1,000 to persons who are married and $300 for each child under 18. There is a further exemption of $300 for each child or person for whose support the taxpayer is legally liable, and who is actually so supported while acquiring an education; otherwise it is $200. On the excess above the exemption the rate progresses from one per cent. on all taxable incomes up to $10,000 to five per cent. on incomes in excess of $50,000.

Arkansas has proposed a constitutional amendment permitting a graduated income tax. The Massachusetts legislature approved (Ch. 140) the amendment proposed by the 1914 legislature and it was adopted by the electors at the November election. It gives the legislature full power to levy income taxes, differentiated as to income from different kinds of property, although income from property may not be taxed at a rate lower than other incomes. One section of the

general amendment proposed to the tax article of the Utah constitution permits income taxes. The definition of taxable and exempt income has been amended in Virginia (Ch. 81) and the statute empowering cities, counties and towns to levy an income tax repealed.

Inheritance Taxes.—Receipts from the inheritance tax law of Connecticut having fallen off on account of the too liberal rates and exemptions fixed by the 1913 legislature (Ch. 73), the governor recommended a law which would take the valuation of the intangible assets of estates of decedents away from 113 probate courts and put it into the hands of the tax commissioner. While this was not done, a 1915 act (Ch. 332) does give the commissioner some opportunity to represent the interests of the state in an appraisal. Under the new law property passing to any institution receiving state aid, or to municipal corporations for a public purpose, is entirely exempt. Taxable estates are divided into three classes according to the degree of relationship. The exemption varies from $10,000 to $3,000, and the rates from one per cent. on estates of $10,000 to $50,000 passing to direct heirs to eight per cent. on property passing to collateral heirs and others valued at more than $1,000,000.

A new inheritance-tax act in Kansas (Ch. 357) grants the usual exemption to all property bequeathed to educational and charitable institutions. It also exempts entirely property passing to direct heirs. An exemption of $5,000 is permitted to brothers and sisters. The rates vary from three per cent. on distributive shares of $5,000 to $25,000 to brothers and sisters to 15 per cent. on shares amounting to $500,000 or more to collateral heirs and strangers in blood. The South Dakota law as changed in 1915 (Ch. 217) imposes a tax progressing from "primary rates" of one to five per cent. on property not exceeding $15,000 in value up to three times the primary rates on estate of $1,000,000 and upward. Exemptions granted to taxable estates run from $10,000 for a widow or husband, adopted child or lineal issue, to $100 for the fifth class of heirs. A new law passed by North Dakota (Ch. 217) abolishes the exemptions allowed in the law of 1913 (*A. Y. B.*, 1913, p. 358) and lowers the rate imposed on the larger amounts received by collateral heirs. The rates on the five classes of heirs now vary from "primary rates" of one to five per cent. on amounts under $15,000 to three times the "primary rates" on amounts of $100,000 and over.

Oklahoma has revised its inheritance tax law (Ch. 162) so as to avoid double taxation of stocks and bonds. The New Jersey law is amended (Ch. 331) so as to give a discount of five per cent. if the tax is paid within six months, and imposing a penalty of 10 per cent. if not paid within one year. An amendment to the New York law taxes a survivor's interest in joint accounts and taxes certain stocks, bonds and partnership interests of non-residents. The laws of Arkansas (Act 231), California (Ch. 198), Missouri, New Hampshire (Ch. 106), Nebraska (Ch. 113), Illinois, Massachusetts (Ch. 152), and Tennessee (Ch. 38) were also amended in minor ways. One feature of the laws to which special attention seems to have been given in 1915 is the method of appraisal of property subject to the inheritance tax.

Taxation of Mineral Resources.—The Pennsylvania law of 1913 laying a tax of 2½ per cent. on the value of each ton of anthracite coal as prepared for market has been amended to remedy minor defects. Its constitutionality was upheld in a decision rendered on April 30 in three test cases brought by the companies. The new act (No. 331) provides that the state and counties are to get equal shares, the latter portion to go to the municipalities producing the coal. An Oklahoma act (Ch. 107) provided for levying a tax of two per cent. on the gross production of oil and gas, in lieu of all other taxes on machinery and equipment used in production. The constitutionality of the law was vigorously contested by the oil-producing interests, but its validity was upheld in a unanimous opinion of the Supreme Court of the state handed down on Oct. 12. The same act imposed a tax of one-half of one per cent. on the gross value of ores bear-

ing lead, zinc, gold, silver, copper, or asphalt.

The New Mexico Tax Commission is required (Ch. 55) to determine the net value of the output of productive mines and certify the amount to counties in which the mines are located. Net value is defined as the difference between the actual cost of production and the amount (not less than its true market value) received for it. The rate is the same as the general tax rate of the county. Non-productive mining lands are taxed upon a "reasonable" valuation in addition to their value for grazing, agriculture or other purposes. By a Colorado act (Ch. 138) producing mines or mining claims are to be assessed for taxation at one-fourth of their gross proceeds of the preceding year, or on their net proceeds if that is greater than one-fourth of the gross proceeds. Section 5 of the constitutional amendment to be submitted in Utah proposes to tax separately the surface ground of mining lands, the mineral deposits and net proceeds of producing mines. The new Tax Commission in Nevada is required to ascertain the net proceeds of all operating mines by getting the gross value of bullion and ores and deducting from that the actual cost of extraction and mining.

Miscellaneous Taxes.—Oregon and Utah have laid special taxes on the trading-stamp business. The Oregon law (Ch. 228) levies an annual excise tax of five per cent. on the gross receipts, received within the state, of companies furnishing trading stamps. The Utah act (Ch. 117) lays a tax of 50 cents on each thousand trading stamps sold or given to dealers to be given out with merchandise sold. If not paid by the party issuing them, the tax must then be paid by the retail dealer. Virginia imposes a state license tax (Ch. 84) on slot machines.

The stock-transfer tax has been adopted by Pennsylvania. The act (Ch. 372), which was redrafted from a bill which was twice defeated, imposes a tax of two cents on each $100 of the face value of sales, memoranda of sales, or agreements to sell stock. The law went into effect on Jan. 1, 1916. The Massachusetts stock-transfer law of 1914 (*A. Y. B.*, 1914, p. 347) was amended in 1915 (Ch. 238) to compel the person making the transfer to pay the tax and in general to secure a more strict enforcement. An occupation tax of one-quarter of one mill on wheat and flax and one-eighth of one mill on other grain received or handled is levied by Wisconsin (Ch. 209) on persons operating grain elevators or warehouses. Grain so taxed is exempt from other state or municipal taxation.

State Debts.—The serial-bond method of paying state debts has been under consideration in Massachusetts and New York. The Massachusetts legislature in 1914 directed the Commission on Economy and Efficiency to make a report on a proposed plan for retiring outstanding straight term bonds and issuing in their stead bonds maturing serially. An adverse report was submitted on Jan. 16. A Nevada amendment to be submitted in 1916 changes the limit of the state debt from $300,000, to one per cent. of the assessed valuation of property in the state. Any law authorizing a debt must provide a tax to pay the semi-annual interest and pay back the principal in 20 years.

Municipal Debts.—New York City was authorized by the legislature (Ch. 308) to issue serial bonds. In many states the legislatures have passed laws or proposed constitutional amendments affecting the debt limit of cities. An amendment adopted in Pennsylvania permits Philadelphia to increase its debt from seven to ten per cent. of the assessed valuation, to provide for the construction of transit and harbor facilities, with the approval of the voters. Existing debt incurred for such purposes, if the improvements are now yielding the city an annual current net revenue, may be excluded in ascertaining borrowing capacity.

A New Mexico law (Ch. 54, Sec. 13) limits the borrowing capacity of counties, cities, towns and villages to 1⅓ per cent. of the actual value of taxable property. This does not apply to debt for construction or purchase of a water or sewer system. A Vermont law limits the bonded debt of municipalities to 10 per cent. of the "grand list" (one per cent. of all property), except with the approval of 25 per cent. of the legal voters at-

tending a meeting. Governor Johnson of California vetoed two bills increasing the debt limit of cities from 15 to 25 per cent. of the assessed valuation.

Municipal and County Budgets.—The Boston Council in June, 1915, provided for the appointment of a budget commission of five citizens to investigate the expediency of adopting the segregated budget system. The commission, in a report submitted on Oct. 1, recommends a system which it considers to be not a compromise between the extreme segregated and lump-sum systems, but a system superior to both.

A Florida act (Ch. 6814) requires the boards of county commissioners to make detailed estimates of all ordinary and extraordinary expenditures, which are to be published in a newspaper and adopted in not less than two weeks after publication. Estimates when so adopted become appropriations which cannot be altered, amended or exceeded. All districts and corporate bodies having power to levy taxes, except cities having a population of over 150,000, in Oregon are (Ch. 222) made subject to a law of 1913 (Ch. 234), which required estimates of amounts to be raised by taxation by any county to be made and published in advance in order to secure public discussion of proposed levies. The act creating a tax commission in Nevada (Ch. 153) makes it the duty of the commission to prescribe forms and require county commissioners to submit budget estimates of county expenses and to require county commissioners to increase or decrease the tax rate so as to provide sufficient revenue to meet the estimates.

A Washington act (Ch. 49) requires officials of all local taxing districts—counties, cities, etc.—to prepare and adopt a budget. Before the first Monday of September every officer or employee in charge of an office must submit to the chief auditing officer an estimate of expenditures itemized in accordance with a prescribed classification and an estimate of revenues, other than taxes, likely to accrue. From these data budget estimates are to be prepared and published and hearings held beginning with the first Monday in October. Estimates when adopted by the proper officials constitute budget appropriations.

BANKING AND CURRENCY

E. E. Agger

THE BANKING SYSTEM

Currency.—The total stock of money in the United States on Oct. 1, 1915, was $4,170,658,973, as compared with $4,037,735,626 on Oct. 1, 1914. The per capita circulation on Oct. 1, 1915, was $36.88, as compared with $37.15 a year earlier.

Gold coin (including bullion in the Treasury) constituted $2,141,782,259 of the total circulation on Oct. 1, 1915, as against $1,861,838,264 a year earlier. The loss of gold due to the heavy exports at the outbreak of the European War (*A. Y. B.*, 1914, p. 358) was more than counterbalanced by the heavy importations in 1915 growing out of the unprecedented exports. $1,318,507,369 of the gold is represented in circulation by "gold certificates," the gold therefor being stored in the Treasury at Washington.

Standard silver dollars made up a coin total on the date mentioned of $568,271,655, as against $565,878,478 the year before. $491,514,000 of these dollars are represented by the silver certificates. Of the silver dollars themselves only $74,543,655 (including $9,451,123 in the Treasury as assets of the Government) were in general circulation. The subsidiary silver increased during the year from $183,059,092 to $186,827,583. Of the Treasury notes of 1890, issued under the Sherman Silver Purchase Act of that year for the purchase of silver, only $2,210,000 remain in circulation.

The United States notes known since Civil War days as "greenbacks" remain under the Act of 1878 which provides for their reissue at the fixed total of $346,681,016. The new Federal reserve notes, entering for the first time in this report, totaled $140,360,000 on Oct. 1. The National bank

notes which in 1914 totaled $1,077,884,776 dropped on the date mentioned in 1915 to $786,736,460. This decline was due to the retirement of the emergency currency issued in 1914 under the Aldrich-Vreeland Act. (*A. Y. B.*, 1914, p. 359.)

The National Banking System.—The number of national banks operating on Sept. 2, 1915, was 7,613. This represents a net addition from Sept. 12, 1914, of 75, as compared with a net addition of 24 during the previous year. Expanding business prosperity explains the larger increase. The sectional distribution of the banks on Sept. 12, 1914, and on Sept. 2, 1915, is shown in the following table:

	Sept. 12, 1914	Sept. 2, 1915	Change
New England	440	434	− 6
Eastern states	1,657	1,652	− 3
Southern states	1,545	1,586	+41
Middle states	2,074	2,101	+27
Western states	1,290	1,298	+ 8
Pacific states	527	535	+ 8
Island possessions	5	7	+ 2
Total	7,538	7,613	+75

In the accompanying table is indicated the movement during the year of the chief items in the resources and liabilities of the national banks as given in the periodic reports to the Comptroller of the Currency. The deposits in 1915 exceed by 337 millions the highest amount previously recorded. It will be observed that in the 1915 report several items appear in both resources and liabilities which do not appear in the report of 1914. These relate to reserves in reserve banks, to notes and bills rediscounted, to acceptances and to letters of credit. Acceptances and rediscounts were made possible by the Federal Reserve Act, and their development from year to year is a matter of first importance.

John Skelton Williams, Comptroller of the Currency, called for statements of condition of the national banks on March 4, May 1, June 23 and Sept. 12. During the year the number of items called for in the reports was increased to permit a more detailed analysis and examination. In December, 1914, the Comptroller reorganized the system of national-bank examination to make it conform with the reserve district divisions and to create a closer working alliance with the Federal reserve system. In February the Comptroller sent to every national bank a copy of a letter asking the directors of each bank to pass a resolution prohibiting overdrafts. On Sept. 29 the Comptroller announced

RESOURCES AND LIABILITIES OF NATIONAL BANKS

	Sept. 12, 1914	Sept. 2, 1915	Per Cent. of Change
RESOURCES:			
Loans and discounts	$6,400,767,386.01	$6,756,680,004.10	+ 5
United States bonds	791,421,126.22	781,726,220.41	−12
Other bonds and securities	1,014,095,251.79	1,311,809,396.19	+29
Due from Federal reserve banks	.....	315,409,198.79	....
Due from approved reserve agents	673,958,901.01	811,379,518.47	+20
Cash	907,298,934.26	842,608,885.62	− 7
Customers' liability under letters of credit	.....	52,321,053.57	....
Customers' liability account of acceptances	.....	16,461,341.58	....
Other assets	1,695,977,895.39	1,378,694,780.27	−18
Total	$11,483,529,494.68	$12,267,090,429.00	....
LIABILITIES:			
Capital surplus and undivided profits	$2,071,814,271.24	$2,091,459,543.80	+.09
National bank notes outstanding	918,270,315.50	718,496,591.50	−21
Due to banks and bankers	1,969,728,626.54	2,459,607,984.33	+24
Individual deposits	6,139,081,279.77	6,762,182,714.54	+10
United States deposits	97,338,771.19	.....	....
Notes and bills rediscounted	.....	45,550,405.57	....
Letters of credit	.....	55,137,152.61	....
Acceptances based on exports and imports	.....	13,077,388.22	....
Other liabilities	318,286,230.44	121,578,648.43	−61
Total	$11,483,529,494.68	$12,267,090,429.00	....

RESOURCES AND LIABILITIES OF INSTITUTIONS UNDER STATE CHARTERS

(*In Thousands of Dollars*)

	State Banks	Mutual Savings Banks	Stock Savings Banks	Loan and Trust Companies	Private Banks	Total
Number reporting	14,598	630	1,529	1,664	1,036	19,457
RESOURCES						
Loans and discounts and overdrafts	$2,908,024	$2,170,038	$851,819	$3,048,668	$114,976	$9,093,527
Bonds, securities, etc	420,475	1,869,866	158,294	1,349,613	15,312	3,813,562
Banking house, furniture and fixtures	137,112	38,584	35,968	141,599	5,751	359,016
Other real estate owned	31,772	17,884	9,704	45,183	8,066	112,612
Due from banks	557,620	183,397	124,848	754,162	24,935	1,644,964
Checks and other cash items	74,136	935	3,280	47,643	593	126,588
Cash on hand	242,754	21,936	40,844	287,957	6,451	599,945
All other resources	27,705	16,738	13,913	198,291	1,577	258,227
Total	$4,399,602	$4,319,382	$1,238,673	$5,873,120	$177,665	$16,008,444
LIABILITIES:						
Capital stock paid in	$503,985	.....	$92,982	$476,806	$20,547	$1,094,322
Surplus fund	221,081	$289,724	40,905	450,675	8,442	1,010,828
Undivided profits	97,220	70,292	26,753	126,718	4,037	325,022
Due to banks	176,960	411	10,184	386,518	1,230	575,306
Dividends unpaid	693	.....	73	1,480	40	2,288
Individual deposits	3,277,772	3,950,666	1,047,039	4,204,596	134,410	12,614,485
Postal savings deposits	5,429	6	1,492	11,420	.....	18,348
Notes and bills rediscounted	12,742	.....	1,623	4,182	984	19,532
Bills payable	75,979	621	2,851	23,574	5,535	108,561
Other liabilities	27,738	7,661	14,766	187,146	2,436	239,749
Total	$4,399,602	$4,319,382	$1,238,673	$5,873,120	$177,665	$16,008,444

the important ruling that the clause in the National Bank Act prohibiting a loan to a single person or firm beyond 10 per cent. of the capital and surplus of a national bank did not apply to government loans. This was apropos of the participation by the national banks in the $500,000,000 loan to Great Britain and France. As the Federal Reserve Act puts the power to designate reserve cities, lodged formerly in the hands of the Comptroller of the Currency, in the hands of the Federal Reserve Board, the Board during the year designated Chattanooga and Nashville, Tenn., as reserve cities.

Through the authorization by the Comptroller in August of the consolidation of the Century Bank of New York City, a state institution, with the Phenix National Bank of the same city, the consolidated bank is permitted to have eleven branches. This is the first national bank with branches. Authority for the retention of the branches is said to be found in Section 5154 of the U. S. Revised Statutes.

In a circular letter dated Oct. 27 the Comptroller complained of violation of usury laws by many national banks. To this letter the National Bank section of the American Bankers' Association sent a reply alleging that the Comptroller's charges had created a bad impression and that a great injustice had been done to a "great majority" of the national banks. The Comptroller responded on Nov. 23. While praising the institutions that had not been guilty of usurious practices and while soliciting coöperation in stamping out the evils complained of, the Comptroller in general stood by his previous assertions.

A case of importance bearing on the supervisory power of the Comptroller of the Currency was the Riggs National Bank case. On April 12 the bank, a Washington institution, secured an order in the Supreme Court of the District of Columbia restraining the Treasury officials from paying into the Treasury $5,000 in interest due on bonds deposited to secure circulation, the Government having claimed the money as a penalty for the failure of the bank to make certain special reports called for by the Comptroller. The bank desired a further order permanently restraining the Comptroller from "interfering

with the business of the bank." The order was made returnable on April 16, but the Government twice asked for postponement. On the resumption of the hearings in May, according to press reports, the Government scored heavily, showing that the bank had been engaged in questionable stock operations. The arguments were concluded on May 21 and the court took the case under advisement. In his revision of the evidence, Judge McCoy approved the withdrawal by the Comptroller of government deposits from the bank. While a final decision has not been announced, on October 1 an indictment was returned against the president, vice-president and cashier of the bank for perjury. Affidavits had been made by the officers that the bank had never engaged in stock-market operations and had had no dealings with certain brokerage firms which failed. During the trial of the suit against the Government transactions seemingly of this nature were disclosed and the matter was laid before a Grand Jury. The indictment resulted.

State, Savings and Private Banks, Loan and Trust Companies.—Institutions under state charters to the number of 19,457 reported their resources and liabilities to the Comptroller of the Currency as of June 23. The main items and the totals for the different classes of banks reporting are shown in the table on the preceding page.

Postal Savings System.—The opening of postal savings accounts by mail was provided for beginning with July. Postal savings accounts have broken all records during the year. During eight months previous to April 1, there was a gain of $19,000,000, as against a gain of $8,000,000 for the same period the year before. The average monthly gain from the outbreak of the war to the close of 1914 was almost $3,000,000. Over 100,000 new depositors entered the system. At the close of the year, deposits totalled $65,684,708, to the credit of 525,414 people, or an average of $125.02 per depositor. On June 30, 1915, there were 8,832 post offices authorized to accept deposits, with 714 branches and stations, making a total of 9,546 depositories.

FEDERAL RESERVE SYSTEM

The Federal Reserve Banks.—The reserve banks were opened for business on Nov. 16, 1914. That the banks as a whole have established themselves with increasing solidity is shown by the following table of resources and liabilities compiled from the statements issued by the Federal Reserve Board:

	Dec. 31, 1914	Oct. 22, 1915
RESOURCES:		
Cash reserves	$255,647,000	$317,513,000
Bills discounted and loans	10,593,000	43,322,000
Investments	255,000	35,861,000
All other resources	11,349,000	31,184,000
Total resources	$277,844,000	$427,880,000
LIABILITIES:		
Capital paid in	$18,051,000	$54,834,000
Government deposits	.....	15,000,000
Reserve deposits net	256,018,000	340,444,000
Federal reserve notes net	3,775,000	14,809,000
All other liabilities	.....	2,793,000
Total liabilities	$277,844,000	$427,880,000
Gold reserve against net liabilities, per cent.	88.2	79.3
Cash reserve against net liabilities, per cent.	98.4	88.9
Cash reserve against liabilities after setting aside 40 per cent. gold reserve against net amount of Federal reserve notes, per cent.	99.3	91.1

The table on the opposite page shows how these resources and liabilities were distributed among the several reserve banks on Oct. 22.

On June 24, the Federal Reserve Board announced the approval of the opening of a branch of the Atlanta bank at New Orleans. The branch was opened on Sept. 10.

On Nov. 24, Secretary McAdoo announced that he had determined to appoint the Federal reserve banks as depositories and fiscal agents of the Government. The arrangement was to go into effect on Jan. 1, 1916. No interest is to be paid on government deposits. The amount to be deposited was estimated to be about 8½ millions.

RESOURCES AND LIABILITIES OF FEDERAL RESERVE BANKS, OCT. 22, 1915
(*In thousands of dollars*)

	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City	Dallas	San Francisco	Total
RESOURCES:													
Reserves	$16,977	$165,036	$14,307	$16,615	$12,532	$8,949	$41,290	$8,161	$6,625	$7,212	$10,709	$9,100	$317,513
Discounts	3,549	5,226	1,662	1,087	7,095	6,475	3,480	1,380	1,874	3,089	6,320	1,585	43,322
Investments	3,740	8,573	3,382	4,595	.....	.....	6,971	2,092	1,875	2,310	.....	2,379	35,861
Other resources	1,408	10,173	4,700	1,309	1,557	1,490	4,793	2,528	1,339	1,021	1,689	3,583	21,184
Total	$25,674	$188,948	$24,051	$23,606	$21,184	$16,914	$56,534	$14,661	$11,713	$13,632	$18,718	$16,647	$427,880
LIABILITIES:													
Capital paid in	$5,181	$11,047	$5,266	$5,945	$3,349	$2,413	$6,634	$2,783	$2,491	$3,025	$2,767	$3,933	$54,834
Government deposits	.....	.....	.....	.....	5,000	5,000	.....	.....	.....	.....	5,000	.....	15,000
Reserve deposits	20,493	170,920	18,785	17,661	7,591	5,671	49,900	11,841	9,222	9,438	6,208	12,714	340,444
Federal reserve notes	.....	.....	.....	.....	5,098	3,762	.....	37	.....	1,169	4,743	.....	14,809
Due to Federal Reserve banks	.....	4,406	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other liabilities	.....	2,575	.....	.....	146	72	.....	.....	.....	.....	.....	.....	2,793
Total	$25,674	$188,948	$24,051	$23,606	$21,184	$16,918	$56,534	$14,661	$11,713	$13,632	$18,718	$16,647	$427,880

The Federal Reserve Board.—The Federal Reserve Board's activities during the year have been concerned in the main with the perfection of the machinery and appliances of the reserve system, with the object of eliminating friction and stimulating cooperation. Complaints were heard in connection with the delimitation of the boundaries of the reserve districts but action was taken in only two districts; 132 banks in northern New Jersey were transferred from the Philadelphia to the New York district, and 121 southern Oklahoma banks were transferred from the Dallas to the Kansas City district. During the year the question arose as to the Board's power completely to abolish a reserve district or a reserve bank. In an opinion given on Nov. 22 the Attorney-General held that the Board had no such power. Thomas B. Paton, the counsel of the American Bankers' Association, has, in the December *Bulletin* of the association, an argument tending to prove that the Board has this power. On March 22 the Board put itself on record as being sympathetic toward legislation in favor of state banks coming into the system and of national banks exercising trust functions. In October the Board obtained permission to intervene and to file a brief in a Michigan case involving the constitutionality of the provision of the Federal Reserve Act granting trust powers to national banks. In issuing regulations concerning the admission of state banks to membership in the reserve system, the Board frankly appealed for a broad membership. It made provision in the regulation for the possible withdrawal of state banks on a 12-months' notice.

At the opening of the year the Board submitted to Congress its first annual report covering its activities down to Dec. 31, 1914. The report dealt with the following topics: early problems of the board, election of directors, purchase of commercial paper, discount policy, readjustment of reserves, gold-exchange fund, cotton-loan fund, currency situation, open-market operations, place of reserve banks, clearing of checks, admission of state banks, federal advisory council, administration and expenses of

the Board. The exhibits appended to the report contained much incidental information.

The Board has issued from time to time regulations governing the administration of the system. The regulations covered sundry topics, the most important relating to time and savings accounts, to acceptances, to the increase and decrease of capital of reserve banks, to agricultural paper, to farm loans and renewals. The regulations are published in full in the *Federal Reserve Bulletin*, from month to month.

The Reserve Board began the publication of the *Federal Reserve Bulletin* in May. It is intended to give a monthly summary of developments in connection with the reserve system. Besides giving valuable statistical material the *Bulletin* reproduces the regulations of the Board, the more important of the Board's decisions, and the opinion of the Board's counsel concerning doubtful points of law. Subscription to the *Bulletin* is open to those interested at the rate of $2.00 per year.

Clearings in the Reserve System.—On Dec. 1, 1914, the Board granted authority to the Reserve Banks of Kansas City and Chicago to clear for members, and in March, 1915, the Board announced that it had determined to direct the introduction of a voluntary reciprocal plan, for immediate clearance at all Federal reserve banks where a clearing plan was not already in operation. A plan was accordingly announced which permits member banks to enter or leave the clearing system at will, and intra-district clearings on the part of member banks are being increasingly effected through the reserve banks.

Under date of May 8 the Board promulgated an order establishing a gold clearance fund to facilitate clearances between the reserve banks. The order called for the deposit in the U. S. Treasury by each reserve bank of $1,000,000 in gold or gold certificates. In addition to this sum, which was to be maintained intact, each bank was required to pay in also an amount equal to its net indebtedness to other reserve banks. The order provided that at the close of business on each Wednesday the reserve bank should telegraph to the Board at Washington their several claims against each other. The telegraphic returns were to be confirmed by mail advices. The Board then undertook to clear the amounts in the usual way, making the necessary entries in the gold settlement fund account.

Operations began on May 27. The gold deposits were $18,450,000. On Oct. 22 the amount in the fund was reported as $54,670,000. The total clearings on May 27 were $19,644,000. Down to and including Sept. 23 the total clearings were $428,500,000. The total balances in these were $87,355,000, or 20.39 per cent. of the total clearings. The net change in the ownership of the gold held was $19,871,000, or 4.64 per cent. of the total clearings.

BANKING LEGISLATION

Federal Legislation.—The Aldrich-Vreeland Act of May 3, 1908, expired by limitation on June 30. The Act was to have expired originally in June, 1914, but the Federal Reserve Act of Dec. 23, 1913 extended it one year. The only outstanding issue of emergency currency under it was $200,000 held by a failed bank in Pennsylvania. Although some of the currency associations provided for in the original Act were formed in various parts of the country, no currency was issued under it until the war crisis of 1914 (*A. Y. B.*, 1914, p. 359).

On March 2, the House passed the bill previously passed by the Senate permitting an increase in the amount of acceptances based on the importation or on the exportation of goods which the Federal Reserve banks may discount for member banks. Originally the limit was one-half of the capital stock and surplus. This has now been extended to the full amount of the capital stock and surplus. Both for the reserve banks and for the member banks final control is vested in the Federal Reserve Board.

State Legislation.—Forty-one state legislatures held sessions during the year and in almost every case some legislation affecting the state banks was enacted. Instead of enumerating the changes in banking law for each state, the report of the law commit-

tee of the American Bankers' Association will be followed and the important changes will be indicated from the viewpoint of the different classes of legislation.

Uniform Bills of Lading Act.—This act was passed in Idaho, Washington and Vermont. It is now law in the following states as well as in the territory of Alaska: Maryland, Massachusetts, Connecticut, Illinois, Iowa, Michigan, New York, Ohio, Pennsylvania, Louisiana, New Jersey, Rhode Island, Idaho, Washington and Vermont.

Uniform Warehouse Receipts Act.—This law was passed in Idaho, Arkansas and Oklahoma. It is now law in 33 states.

Uniform Stock Transfer Tax Act.—This law passed the legislature in Idaho, but was vetoed by the governor. It is now law in 10 states.

False Statements for Credit Act.—This law was passed during the year in New Hampshire, New Mexico, West Virginia, Wisconsin, Oklahoma, Florida and Wyoming. It is now law in 20 states.

Derogatory Statements Affecting Banks.—Laws on this subject were passed in five states: Delaware, Florida, Kansas, New Mexico and North Carolina. Such laws now exist in 20 states.

Checks without Funds Act.—While the wording urged by the American Bankers' Association in its uniform act on this subject was not uniformly adopted, six states passed laws under this general head. They are Nebraska, North Dakota, Ohio, Kansas, Vermont and Delaware. Thirty-one states now have laws dealing with this subject, with the same general purpose but with diversity of detail.

Deposits in Two Names.—Delaware, Idaho and Missouri adopted the act recommended to cover this subject by the American Bankers' Association. It is now the law in 29 states.

Deposits in Trust.—The uniform law on this subject was passed in Idaho and Delaware. In all, it prevails in 23 states.

Competency of Bank Notaries.—Kansas and Minnesota passed bills substantially like the Association's measure on this subject. Similar legislation is now effective in 11 states.

Refusal of Check through Error.—This is a new measure fathered by the Bankers' Association which aims to protect banks against excessive damage where through an error a check has been refused. It was passed in Idaho, Montana, Oregon and New Jersey. It was introduced in four other states but failed of passage.

Deposits of Minors.—New Mexico passed the law permitting the acceptance of deposits from minors. Idaho, Maine, Missouri and Montana have also amended their laws to this general purpose.

General Banking Laws.—Three states, Missouri, Montana, and New Mexico, passed complete laws revising and modernizing the banking code.

Guaranty of Bank Deposits.—South Dakota has been added to the list of states providing deposit guaranties, although the law involved is still subject to popular ratification. The basis of the guaranty fund is an assessment of one-quarter of one per cent. of the average daily deposits.

Membership in the Federal Reserve System.—Sixteen states passed during the year the legislation necessary to permit state banks to join the Federal reserve system. The states were: California, Delaware, Idaho, Iowa, Kansas, Maine, Michigan, Minnesota, Missouri, Montana, Nebraska, New Mexico, North Dakota, Oregon, South Dakota and Washington.

Trust Powers of National Banks.—The Federal Reserve Act permits the Federal Reserve Board to authorize national banks to do a trust business where the state laws do not forbid. Specific legislation was enacted in some states giving national banks trust powers when authorized to exercise those powers under the laws of the United States. Colorado, Indiana, Iowa, South Dakota, Vermont, Virginia and Washington adopted such legislation. In Colorado, Indiana, South Dakota and Washington trust powers were granted to state banks as well. Three states, North Carolina, New Hampshire and Missouri, have adopted laws practically prohibiting the exercise of trust powers by national banks.

Acceptances.—New Jersey, Missouri and Connecticut have enacted legislation authorizing acceptances by banks

and trust companies. The period over which the draft may run, the total amounts authorized and the amount accepted for one customer are variously controlled.

Important Court Decisions.—On May 10, the U. S. Supreme Court upheld the constitutionality of the California bank law which provides that the state superintendent of banks may take possession of unsound banks without prior court proceedings. On Jan. 7 Justice Garrison of the New Jersey Supreme Court filed an opinion affirming the decision of the lower courts that the state bank-tax law is constitutional. The New York Court of Appeals has upheld the constitutionality of that part of the state banking law which empowers the state superintendent of banks to take possession, for purpose of liquidation, of any bank which he believes unsafe or unsound. The U. S. District Court of the Northern District of West Virginia in December, 1914, declared the West Virginia "blue-sky" law unconstitutional. In a case against the Oklahoma bank-guaranty board, the U. S. Supreme Court held on Dec. 5, 1914, that a state bank-guaranty board cannot be sued without the state's consent. On the same day the Supreme Court of Oklahoma held that while a state bank, through nationalization, puts itself beyond state control, it "does not thereby escape liabilities incurred by it during its continuance as a state bank." The effect of this decision was to render liable to the payment of the five per cent. deposit-guaranty assessment 155 national banks which had become nationalized after the passage of the deposit-guaranty law. According to the state banking commissioner the total amount involved was about $600,000. Philadelphia banks brought suit to test the constitutionality of the Star Revenue Act in its application to banks. The Act was upheld by Judge Dickinson of the U. S. District Court in a decision handed down in Philadelphia. Appeal was taken.

BANKING AND THE WAR

Emergency Currency.—The Aldrich-Vreeland Act (see *supra*) providing for the issue of emergency currency expired on June 30. All the currency issued under it had been retired except that issued to a bank in Pennsylvania which had failed.

Foreign Exchange.—The measures adopted to relieve the strain in the foreign-exchange market, as reported in the last issue of the YEAR BOOK (p. 357), proved only temporarily necessary. The final call for the New York City loan was made early in December, 1914. For the total loan of $80,243,941 there were eleven calls ranging from $2,500,000 to $16,500,000 each. The payments were made as follows: $11,824,088 in exchange; $35,264,636 in gold; $33,155,215 in clearing-house checks (the managers of the loan themselves purchasing the exchange).

The gold pool was dissolved toward the end of January. The total fund pledged for the pool was $109,000,000. Of this about 25 per cent. was paid in. About $10,000,000 was shipped to Ottawa for the account of the Bank of England and the balance was returned to the subscribers. Although on the operations as a whole the managers could show a profit, the rapid decline in sterling exchange after the outbreak of the war, gave rise to a small loss in the sale of the exchange closing out the Canadian balance.

After the beginning of the year the natural course of trade cleared the exchange situation and gave rise to a problem exactly the opposite to that which arose in August, 1914. The exports of food supplies, raw material, manufactured articles and munitions of war increased so rapidly that the supply of foreign exchange, especially sterling, became relatively redundant. The financing of a large part of all the Entente Allies' purchases having been arranged through England, the burden of almost the whole export movement devolved upon sterling. At the same time that supply was expanding, demand tended to fall off, due to a marked cessation in the selling of American stocks by Europe, to the complete elimination of the normal tourist demands, to a decline in imports, and to the partial substitution of the dollar for the pound sterling in international exchange transactions. The price of sterling ex-

change declined rapidly in the New York market, going as low as $4.50 for demand sterling in September and threatening seriously to check American export trade.

Remedies were partially applied. Direct banking credits in dollars were opened in the country for foreign governments and for private banking firms. As these were private banking transactions the full amounts were never disclosed. In addition to the unpublished credits there was the $500,000,000 loan, backed by the joint responsibility of the British and French Governments. This loan was negotiated by a formal joint commission headed by the Lord Chief Justice of England, Baron Reading. The commission sought originally a billion dollar credit, but this was discouraged by the American bankers. Subsequently, other special commercial credits were announced. In November a one-year $15,000,000 credit in favor of French industrial interests was arranged. A supplemental credit of equal amount was also promised. This credit was arranged for on an acceptance basis; 90-day bills were to be drawn with the privilege of three renewals. On Nov. 26 there was announced a $50,000,000 credit to eight London banks, with £11,000,000 in government bonds deposited at the Bank of England as security. While the sterling exchange rate rallied after it reached $4.50 in September, the half-billion dollar loan failed to keep it from slumping in October. Demand sterling was quoted as low as $4.60 on Oct. 27. It rallied to $4.66 at the end of November and hovered about $4.70 toward the end of the year. (See also XIII, *Economic Conditions.*)

Gold Movements.—While at the outbreak of the war frantic efforts were made to export gold, the rapid drop in the price of sterling exchange after the beginning of the year finally resulted in an impetus to gold importation. The practical suspension of gold payments in European countries and the embargo put on gold exports by foreign governments prevented the normal flow of gold to the United States. Such gold as came was in most cases arbitrarily released by the Bank of England or by the Bank of France. Nevertheless, according to the October *Federal Reserve Bulletin*, from Jan. 1 to Sept. 17 the net importation of gold into the United States was $241,818,000. Between Aug. 1 and Oct. 22 four large shipments were made on account of the Bank of England as follows: Aug. 1, $19,534,200; Aug. 29, $19,500,000; Sept. 8, $19,466,000; Oct. 19, $25,000,000; total, $83,500,200. In addition to these there were small shipments aggregating five and a half millions during the month of October.

The gold shipments were accompanied, moreover, by almost one hundred million dollars' worth of American securities, but it appears that if sterling exchange is to be maintained near its normal level, the need of even further credit advances to the Allies by the United States is clearly indicated.

INSURANCE

LIFE INSURANCE

WENDELL M. STRONG

General.—The years 1914 and 1915 are very closely linked in life insurance because in both of them the European War has been in the foreground as a factor of predominant influence in this as in all other kinds of business. The year 1914 started as a very favorable one in the amount of new business done. Then, with the beginning of the war, came a sudden and terrific shock to all kinds of business, which necessarily affected life insurance. The immediate effect showed in a very considerable falling-off in new business, owing to the fear among the general public of taking on new obligations. But even before the end of the year, the life-insurance situation in reference to new business began to improve. The final result was that the total amount of insurance written by United States companies decreased only about one per cent. from that of the previous year. The fact that there should be a decrease at all, however, when the history of many years had recorded

an increase each year in the amount of new business, and usually a very considerable one, shows how severe the shock was.

Statistics are not yet available for the year 1915, but it is known that the recovery has continued until, at the end of the year, it has become complete and the increase in new business is proceeding at least as rapidly as the normal rate. Furthermore, there is no question that when statistics are available for the entire year they will show this increase for the year to have been very considerable.

It is interesting to note that, notwithstanding the very severe financial strain from August, 1914, continuing through the rest of the year, the increase in the amount of policies surrendered and also the increase in policy loans from the end of the preceding year, were neither of them abnormal, and were both less than in the preceding year. This seems somewhat anomalous, but may be an indication that with the great majority of insuring classes the effect of the depression was rather to cause anxiety and fear as to the future than a lack of ready money.

There has been in the years 1914 and 1915 a singularly good justification of the use of the amortization method (*A. Y. B.*, 1914, p. 361) of valuing perfectly secure bonds for life-insurance company purposes rather than that of valuing on the basis of market value at the end of the year. At the beginning of the war the decline in market values of even the very best securities was sharp and severe; in fact, for a time, while the Stock Exchange was closed, it might be said that market values did not exist. The recovery has been almost complete; yet if the companies had been compelled to use market values as of the end of the year to value their bonds, only a tremendous surplus would have prevented companies which were exceedingly prosperous, and not only solvent but as safe as any financial institution could be, from appearing technically insolvent by such an artificial standard. On the other hand, too large a surplus has been recognized as an evil, and in New York the legislature has limited for mutual companies the amount of surplus that can be retained.

Two deaths occurring during the year should be noted. One is that of James W. Alexander, for some years prior to 1906 president of the Equitable. His name is most closely linked with the Armstrong investigation of 1905 and the results that followed therefrom, since it is generally believed that it was his refusal to consent to the methods desired by those in control of the stock which was an immediate cause of the investigation. The other death is that of Sylvester C. Dunham, president of the Travelers, who has long been an important figure in insurance.

Return of Companies to Wisconsin.—In 1906, following the lead of New York, Wisconsin had an insurance investigating committee which suggested many changes in the insurance law, intended to be in the interest of reform. Most of the recommendations were enacted into law, but some which were omitted were so interconnected with those enacted as to make the new law in certain respects obscure and almost meaningless. Other provisions of the new law were the result of purely theoretical considerations and made requirements concerning minute details of a sort impossible for many of the best companies to comply with unless they changed their entire system. As a result, most of the more important mutual companies withdrew from the state when the law went into effect. In 1915, with the support of the Wisconsin commissioner of insurance, bills were enacted modifying or doing away with the provisions of the law which had made it necessary for these companies to withdraw, and as a consequence, many of them are again reentering the state.

War Mortality.—A source of concern to some policyholders in the early months of the war was that of the mortality to which the companies which had done business in Europe would be subjected from the war. When the probabilities were investigated, so far as was then possible, in the offices of the companies concerned, it was seen that such mortality would necessarily be so small as to be unim-

STATISTICS OF UNITED STATES LIFE-INSURANCE COMPANIES
(*Insurance Year Book*)

Year	Number of Companies	End of Year		Premiums Received[2] (millions)	Total Income[2] (millions)	Total Payments to Policyholders[2] (millions)	Total Disbursements[2] (millions)	New Business[3] (millions)	Amount in Force at End of Year[3] (millions)
		Admitted Assets[2] (millions)	Surplus[1] (millions)						
1914	250	$4,940	$665	$748	$988	$510	$708	$2,507	$17,381
1913	259	4,658	624	715	925	468	659	2,533	16,588
1912	248	4,407	621	672	893	447	628	2,405	15,559
1911	239	4,163	603	632	834	414	569	2,101	14,577
1910	211	3,874	557	593	779	387	540	1,846	13,233
1909	189	3,643	545	565	748	360	505	1,694	12,513

[1] Includes amounts set apart for dividends to policyholders during following year. [2] Includes industrial business in 31 companies. [3] Does not include industrial business.

SURRENDERS, LAPSES, LOANS AND DIVIDENDS[1]
(*New York State Report*)

Year	Number of Companies	Amount in Force, End of Year (millions)	Amount of Policies Surrendered (millions)	Amount of Policies Lapsed (millions)	Policy Loans End of Year (millions)	Dividends to Policyholders (millions)	Amount Paid for Surrendered Policies (millions)
1914	35	$14,933	$362	$427	$657	$104	$102
1913	34	14,304	339	383	614	96	87
1912	34	13,527	276	366	548	88	84
1911	34	12,802	252	325	507	80	75
1910	33	11,669	236	277	465	72	72
1909	35	11,110	250	270	420	62	73

[1] Life Companies reporting to State of New York only.

portant. Now that results are known for over a year of the war, it appears that this opinion was fully justified; in fact, war losses are much smaller than anyone would have anticipated. The figures for "war claims" have been given out for the first 13 months of the war by the New York Life, which has the largest business in Europe of any American company, and the Mutual Life, which comes in the next rank in amount of European business in force. In the New York Life war claims were about $1,400,000, and in the Mutual Life a little under $400,000. These figures are known to have covered, besides the direct war claims, deaths occurring in the sinking of the *Lusitania*, and also, in the case of the latter company, other deaths of civilians which could be traced directly to the war and deaths from disease of any who were even remotely connected with military operations; hence, figures unquestionably included a considerable number of losses which would have occurred had there been no war. The figures included all the deaths which had become known to the companies whether the regular proofs had been submitted or not; they included also a considerable number of deaths of those who originally took their insurance in the United States. It will be seen how insignificant the amounts of these war claims are when it is considered that the amount in the one case was about 60 cents, and in the other less than 25 cents, per $1,000 of insurance in force.

Modification of the Expense Limitation in New York.—Prior to 1906, the expenses of the companies operating in New York State were not limited by law, and, as a result, these expenses were high, especially those for new business, which were excessive because of the severe competition between the companies. This was brought out very fully and clearly at the time of the insurance investigation in 1905, and, in consequence, an addition was made to the insurance

law which has brought about changed conditions in the business and has been most far-reaching in its effects. This addition was a clause placing a restriction on both the total expenses of a company and also on the expenses for new business. The chief allowance for the total expense was the "loading" received, that is, the part of the premium to provide for expenses and contingencies. This limitation of total expenses applied to the companies issuing participating insurance only, and not to stock companies issuing only non-participating insurance. Reasons why such companies should be excepted from the limitations are not difficult to find, the principal ones being, first, that as no dividends were payable under the policies in non-participating companies, the question of expenses made no difference to the policyholder as long as the company remained solvent; and, second, that the non-participating premiums were lower and contained a considerably lower loading than the participating, so that the same restrictions on the former would have been severe.

When the Metropolitan and the Prudential, the two largest non-participating companies, mutualized, they desired to retain the same premium rates, that is, to use the same premium rates for participating insurance that had been used for non-participating, and an attempt was made to modify the law so that if the loading were less than 25 per cent. of the net premium, then such percentage should take the place of the loading as an allowance for expenses. This was opposed very strongly by many who felt that thus to weaken the section of the law regarding expenses would be both unfortunate in itself and also, perhaps, the first step towards emasculating it, and that a return to the former conditions of unrestrained competition and high expenses, which would result in low dividends, might follow. The result was a compromise by which 25 per cent. was made the allowance in lieu of the loading, so far as the business written before a company became mutualized was concerned, while, for that written after, the law as originally adopted still stands. Since this modification referred only to business in force before mutualization, it cannot be especially criticized, even by those opposed, unless it proves to be merely an entering wedge.

Sale of Equitable Stock.—After the Armstrong investigation in New York State in 1905, the stock of the Equitable was sold to Thomas F. Ryan and later by him to the late J. Pierpont Morgan. During 1915, this controlling stock interest has been sold to T. Coleman du Pont. Mr. du Pont announces that the trusteeship of the stock, which has existed for some years as a safeguard to the policyholders of the company, will be continued. Both the history of the Equitable and the fact that it is the largest stock company make any change in the control of the stock of special interest and importance.

New Mortality Table.—Several years ago the Convention of Insurance Commissioners took up with the Actuarial Society of America the question of preparing a new mortality table. The reason for this suggestion was that it was believed that the "American Experience Table," which dates back about half a century, does not closely enough represent the present mortality in this country and that a new and up-to-date table should be formed. The Society was unable to undertake the compilation of such a table at the time, being in the midst of the work of the Medico-Actuarial Investigation (*A. Y. B.*, 1913, p. 369); this having been finished, the question of compiling a new mortality table has been taken up again, and it now seems probable that the work will be undertaken. If so, and if the new table should become a state standard for valuation, the change would press somewhat severely upon the small and new companies, for the reason that while net premiums would undoubtedly be reduced, reserves required to be held would probably be increased.

That the "American Experience Table" does not correctly represent the mortality among insured lives at the present date is generally acknowledged. At the same time, it is held by most actuaries that, since most

UNITED STATES INDUSTRIAL-INSURANCE COMPANIES
(*Insurance Year Book*)

Year	Number of Companies	New Business (millions)	Insurance in Force at End of Year		Premiums Received (millions)	Losses Paid (millions)
			Number of Policies (millions)	Amount (millions)		
1914	31	$861	31	$4,163	$237	$64
1913	31	850	29	3,977	218	60
1912	31	840	26	3,707	199	53
1911	32	785	24	3,423	183	50
1910	22	749	23	3,179	171	47
1909	22	806	21	2,967	157	42

life insurance is participating, a departure of the mortality table from the real mortality, so long as it is on the safe side, is a matter of no importance to the policyholders, for, under participating insurance, any excess premium paid goes back in dividends.

Industrial Insurance.—The statistics of the industrial-insurance branch of life insurance for 1914 show a continuance of the normal growth which has lasted for many years. So far as is known, this growth has continued in the same way in 1915. Although there were no incidents of particular note in reference to this kind of business as independent of ordinary life insurance, it should always be remembered that, in amount of insurance, it is almost in the same class as ordinary life insurance, the amount in force at the end of 1914 being nearly one quarter, and the new business written being over one-third that of ordinary life insurance.

Fraternal Insurance.—In fraternal insurance the most important events of the year were the winding-up of two of the oldest societies, the Ancient Order of United Workmen, New York jurisdiction, and the Knights of Honor of St. Louis. The former was one of the oldest, if not the oldest, of the New York fraternal societies, having begun business more than 40 years ago. It had been managed with integrity and economy, and it was only the fact of the inadequate rates and gradually increasing costs with the increase in age of the members, and the steady consequent withdrawal of sound risks, that caused insolvency. The liquidation was made by the New York Insurance Department, and the assets amounted to only a little over one-quarter of the unpaid accumulated death claims. The second of these societies was also over 40 years old, and had also been managed with integrity and economy, but, like the first, its rates were inadequate and, though higher premium rates were adopted, this came too late. During the last five years its death rate was extremely high, averaging more than 40 per thousand. In the case of the Knights of Honor the assets were something more than half of the accumulated death claims. In the case of both these societies, however, those

UNITED STATES FRATERNAL ORDERS
(*Insurance Year Book*)

Year	Number of Orders	Assessments (millions)	Total Income (millions)	Claims Paid (millions)	Total Disbursements (millions)	Assets End of Year (millions)	New Business (millions)	Number of Certificates in Force, End of Year (millions)	Amount in Force, End of Year (millions)
1914	498	$125	$144	$98	$121	$189	$1,079	7	$9,171
1913	509	129	144	101	121	183	1,065	8	9,622
1912	397	123	132	95	114	163	1,023[1]	9[1]	9,472
1911	396	117	130	84	113	148	1,200	10	9,839
1910	497	114	128	92	110	129	1,331	8	9,562
1909	645	82	120	89	104	117	1,203	7	8,920

[1] Decrease as compared with 1911 is partly due to incomplete figures from some orders.

living received nothing in the liquidation except the privilege of still having insurance by being taken into another order by an arrangement made in the liquidation. Of course, this meant high rates because of the high average age of those thus reinsured.

PROPERTY AND CASUALTY INSURANCE

S. S. Huebner

Fire and Marine Insurance.—The number of fire and marine companies and Lloyds associations doing business in the United States during 1914 was slightly less than during the previous year, the total being given as 633 by the *Insurance Year Book*, as compared with 645 in 1913 and 621 in 1912. The capitalization of these companies and associations totalled $105,670,000, an increase of less than one-half of one per cent. over 1913. The total assets of $828,187,000, however, showed an increase of $26,269,000 as compared with 17 millions during 1913, 30 millions in 1912, over 40 millions in 1911 and 45 millions in 1910. Net surplus, which had shown a decrease of $1,701,000 during 1913, as compared with the preceding year, showed an increase of only $1,262,000 during 1914, but this increase is small when compared with the increase of 10 millions during 1912 and 20 millions during each of the years 1911 and 1910. As was explained for the year 1913 (*A. Y. B.*, 1914, p. 364), the shrinkage in surplus is traceable, in large measure, to the extremely low range of security values which prevailed during the year. There is reason to believe, however, that this situation will not present itself at the close of 1915 owing to the recent material and continued rise in most security values.

Net premiums and total income show increases during 1914 of $20,608,000 and $19,135,000 respectively. But as contrasted with this gain, paid-for losses increased $23,418,000 and total disbursements $24,543,000. This increase in losses and disbursements has been equalled recently only by the year 1910, during which expenditures were greater than in the preceding year by over $24,000,000. Of the total disbursements the amount paid for losses constituted over 56 per cent.; dividend payments, 8.3 per cent.; and expenses slightly over 35 per cent. The respective ratios of these items to the total payments in 1913 were 54 per cent., 9 per cent., and 37 per cent., and for the year 1912, 53 per cent., 9 per cent., and 38 per cent. The *Insurance Year Book* for 1915 furnishes the following data for companies and Lloyds associations doing a fire and marine insurance business in the United States:

FIRE AND MARINE INSURANCE COMPANIES

Year	Number of Companies and Lloyds	Capital (thousands)	Total Assets Exclusive of Premium Notes (thousands)	Net Surplus (thousands)	Net Premiums (thousands)	Total Income (thousands)	Paid for Losses (thousands)	Paid for Dividends (thousands)	Paid for Expenses (thousands)	Total Disbursements (thousands)
1914	633	$105,670	$828,187	$292,454	$405,975	$440,733	$228,215	$33,786	$144,638	$406,640
1913	645	105,195	801,918	291,192	385,367	421,598	204,797	34,266	143,033	382,097
1912	621	96,944	784,478	292,893	371,626	410,760	190,073	32,526	136,738	359,338
1911	621	97,703	754,344	283,201	358,623	392,966	184,917	33,291	129,474	347,683
1910	628	94,918	713,138	263,867	352,436	385,657	168,433	35,905	124,878	329,218
1909	636	87,638	668,194	243,414	333,862	365,264	156,369	31,217	116,964	304,552

A summary of the report of the New York Insurance Department for the year 1914 shows that 264 companies were writing fire and marine insurance in New York State. The admitted assets of these companies aggregated $694,213,077, an increase of $30,324,874 over the assets of 1913, and nearly 50 millions over those of 1912. Total income was $425,983,160, and disbursements were $403,992,837, an increase as compared with 1913 of $24,606,096 in income and $27,875,578 in disbursements.

The following table shows the combined risks and premiums of American and foreign companies operating in the United States for the past ten years, as reported by the *Insurance Year Book*:

	Amount Covered (thousands)	Premiums Charged (thousands)	Rate per $100
1905	$30,096,204	$342,215	$1.1371
1906	32,278,524	365,135	1.1312
1907	35,375,319	402,874	1.1389
1908	37,155,734	417,671	1.1241
1909	39,951,263	442,415	1.1074
1910	43,123,801	464,616	1.0774
1911	46,276,992	491,072	1.0612
1912	48,840,386	514,594	1.0536
1913	52,856,280	544,836	1.0308
1914	56,012,859	570,687	1.0189

Fire Losses.—Fire losses during 1914, as compiled by the *Journal of Commerce and Commercial Bulletin*, aggregated $235,591,350, as compared with $224,723,350 for the year 1913, or an increase of 3.61 per cent. Losses to insurance companies are estimated by the *Insurance Year Book* at 210 millions in 1914, as against 196 millions and 194 millions in 1913 and 1912. The unusually heavy fire waste of 1914 again calls attention to the great difference in the fire loss per capita in the United States as compared with that experienced in leading European countries. Thus, in 1914 the per capita loss in the United States amounted to approximately $2.10, as contrasted with a per capita loss for leading cities of 42 cents in Austria, 67 cents in England, 63 cents in France, 17 cents in Germany, 37 cents in Italy, and seven cents in the Netherlands. In 47 American cities the per capita loss during 1914 was over $4, in 34 cities over $5, in 19 over $7, in 15 over $10, and in 10 between $12 and $33.

During the first nine months of 1915 fire losses fortunately average considerably lower than during the corresponding period of 1914, the losses totaling only $126,288,400, as compared with $176,706,750 for the same period in 1914, a decrease of $50,418,350 or over 28 per cent., thus showing that the fire-insurance companies have fared well during the year 1915. Although the last quarter made a less favorable showing, the total of $182,836,200 for the year is the lowest recorded since 1905. The following table, compiled by the *Journal of Commerce and Commercial Bulletin*, shows the fire losses in the United States by months for the past five years:

FIRE LOSSES

	1911	1912	1913	1914	1915
January	$21,922,450	$35,653,450	$20,193,520	$23,204,700	$20,060,600
February	16,415,000	28,601,650	22,084,600	21,744,200	13,081,250
March	31,569,800	16,650,850	17,511,000	25,512,750	18,786,400
April	17,670,550	16,349,400	16,738,250	17,700,800	18,180,350
May	21,422,000	21,013,950	17,225,850	15,507,800	11,388,450
June	20,691,950	16,103,450	24,942,700	29,348,000	10,893,950
July	25,301,150	15,219,100	20,660,900	17,539,800	9,006,800
August	12,662,650	14,158,800	21,180,700	11,765,650	10,067,100
September	11,333,250	13,779,300	17,919,300	14,383,050	14,823,500
October	13,945,000	13,651,650	14,932,750	14,004,700	14,465,850
November	18,680,600	16,172,300	15,207,600	21,372,750	21,204,850
December	22,722,850	17,967,000	16,126,450	23,507,150	20,877,100
Total	$234,337,250	$225,320,900	$224,723,350	$235,591,350	$182,836,200

World's Insurance Congress.—A notable event of the year 1915 was the World's Insurance Congress held at San Francisco on Oct. 4 to 16 under the auspices of the Panama-Pacific International Exposition. The programme was a most comprehensive one, and a very considerable portion of it was devoted to a discussion of leading phases of fire and other forms of property and casualty insurance. The wide currency given to the various addresses and exhibits did much to enlighten the public on numerous aspects of the business. The topics discussed related principally to the services performed by the leading kinds of insurance, the methods of promoting insurance education through associations, universities, business organizations, etc., the prevention of fire waste and accidents

and the conservation of life, and the discussion of present problems and future contingencies.

Coöperative Handling of Sprinklered Business.—After several years of discussion the Western Union has adopted the report of a special committee providing for the coöperative handling of sprinklered business throughout the West, through a bureau to be conducted by a joint committee of ten members, five each from the Western Union and the Western Insurance Bureau, with headquarters in Chicago. According to published accounts,

> most of the sprinklered experts of the state rating bureaus will be taken over by the new organization, which will make inspections for the state bureaus and assist them in the formulation of advisory rates. This will secure the uniformity which has been so much desired, and will also make it possible for the stock companies to compete more effectively with the mutuals and inter-insurance concerns, which have had an advantage in the past because they could offer a rate in advance of the installation of the equipment.

Legal Status of Underwriters' Associations.—In the Supreme Court of the District of Columbia at Washington, Justice McCoy dismissed a bill for an injunction to restrain the Home Insurance Co. of New York from continuing as a member of the Underwriters' Association of the District, and handed down an opinion to the effect that the Association is not operating in violation of either the Sherman anti-trust law or the Clayton Act. The injunction was requested on the ground that the District of Columbia Underwriters' Association, which had increased rates for certain classes of risks in the fall of 1914, "had unlawfully conspired to restrain trade by fixing rates for fire insurance for risks in the District." In his opinion, Justice McCoy states:

> The issuing of a policy of insurance is not a transaction of commerce within the meaning of the clause of the Constitution, which provides that Congress shall have the power to regulate commerce with foreign nations and among the several states. There is nothing in the Sherman Act or the supplement thereto, approved Oct. 15, 1914, which indicates that the words "trade or commerce" were used as applying to transactions other than those which Congress has power to regulate under the provision of the Constitution above referred to; consequently those acts cannot be held to apply to the business of fire insurance in the District of Columbia.

Stamp Tax on Marine Policies Declared Unconstitutional.—Another decision that has attracted considerable attention is that handed down by the U. S. Supreme Court on April 5, 1915, in the case of Thames & Mersey Marine Insurance Co., Ltd., *v.* United States. According to the facts of the case the insurance company sued for the recovery of moneys paid under the stamp tax imposed under the War Revenue Act of June 13, 1898. In this instance the tax was imposed upon marine insurance policies insuring cargoes in transit from the United States to foreign ports. The Court held the tax invalid on the ground that it violated Sec. 9, Art. I, of the Federal Constitution, which prohibits any duty or tax on articles of export from any state. Justice Hughes, in his opinion, held that:

> It cannot be doubted that insurance during the voyage is, by virtue of the demands of commerce, an integral part of the exportation; the business of the world is conducted upon this basis. . . . The rise in rates for insurance as immediately affects exporting as an increase in freight rates, and the taxation of policies insuring cargoes during their transit to foreign ports is as much a burden on exporting as if it were laid on the charter parties, the bills of lading, or the goods themselves.

In other words the Court held, as recently pointed out by Darwin P. Kingsley, president of the New York Life Insurance Co., that "marine insurance is so intimate a part of the process of exportation that the stamp tax becomes a tax on exports."

Importance is attached to the decision because of its possible far reaching effects upon the future regulation of all kinds of insurance. A large proportion of those managing insurance companies are heartily in favor of Federal supervision, but up to the present the Supreme Court, in a long line of decisions beginning with Paul *v.* Virginia in 1868 and reaffirmed as recently as two years ago in New York Life Insurance Co. *v.* Deer Lodge County, Montana (*A. Y. B.*, 1914, p. 368), has held that insurance is not commerce and that an insurance policy is not an article of

commerce but a mere incident to commercial intercourse. It is now felt that if the Supreme Court will follow its decision of April 5, especially since the Court has declared in another case (Hooper *v.* California, 1895) that in relation to commercial intercourse there is "no difference whatever between insurance against fire and insurance against the perils of the sea," there is hope that the Court will accept the view that insurance is commerce and that it will accordingly be unnecessary to have the business declared commerce through a constitutional amendment. It is also pointed out that in the case of New York Life Insurance Co. *v.* Deer Lodge County the decision was not unanimous and that Justice Hughes, who rendered the opinion of April 5, was one of the dissenters.

Marine Insurance.—The satisfactory progress of marine insurance in the United States during 1914 may be judged by the showing of the 32 marine-insurance companies reporting to the Insurance Department of the State of New York, although it should be noted that a considerable number of fire-insurance companies also write marine risks. According to the New York report the 32 companies had marine risks in force at the close of 1914 of $696,366,211, an increase of only $678,000 over the total volume of insurance outstanding at the close of 1913. But while the volume of business remained practically constant the premiums received increased from $15,103,360 to $20,286,417, or over 25 per cent. The losses, on the other hand, increased only $396,000, viz., from $9,637,928 to $10,032,695, or only slightly over four per cent. Total income increased during the year from $22,126,211 to $25,514,076, or over 15 per cent., while the net surplus of the companies increased from $16,245,643 to $18,540,151, or over 14 per cent.

War-Risk Insurance.—Congress on Sept. 2, 1914, as a result of the European War, enacted a law which created a Federal Bureau of War-Risk Insurance with a fund of $5,000,000 (*A. Y. B.*, 1914, p. 368). This insurance fund was limited in its operations to a period of two years, and was designed to insure American vessels, freight and cargo whenever it proved impossible to secure adequate war-risk insurance elsewhere on reasonable terms. The first annual report of the Bureau was published in September, and the showing, according to a statement from the Treasury, "demonstrates, despite persistent claims to the contrary, that the Government can conduct a private business enterprise economically, efficiently and profitably." The report shows that the Bureau wrote during the year 1,245 policies, aggregating $82,709,689, and that the total premiums received amounted to $2,004,695. The total losses paid amounted to $695,421, which sum, however, has been reduced by a salvage of $25,232 and further reductions by salvage are expected. The net surplus after payment of all losses during the year thus stands at $1,309,274. The total cost of operating the Bureau was only $17,711. Possible outstanding claims are placed at about $100,000, while the total risks in force on Sept. 1, 1915, aggregated $6,915,215. It should also be stated that the Bureau on several occasions reduced its war-risk rates, the following rates being quoted at the middle of August, 1915; to Liverpool, 1 per cent.; London, 1⅛ per cent.; Havre, 1⅛ per cent.; Far East, *via* England, 1½ per cent.; and Archangel, 2 per cent.

Liability and Compensation Insurance.—The extent of employers'-liability and workmen's-compensation insurance is indicated by the premiums written and losses paid by 43 leading companies writing liability policies and 38 companies transacting workmen's-compensation business. According to the *Spectator*, the liability premiums of these companies for 1914 amounted to $36,717,858, the losses paid to $25,822,553, and the ratio of losses paid to premiums to 70.3 per cent. On workmen's-compensation policies written by these companies the premiums amounted to $31,339,560, the losses paid to $9,374,400, and the ratio of losses to premiums 29.9 per cent. The rapid growth of workmen's compensation is indicated by the fact that the entire premium income reported for 1913 was only $14,733,596, or less than one-half that reported for 1914.

As pointed out in the last issue of the YEAR BOOK (p. 368), the loss ratio of 29.9 per cent. is not to be taken at its face value as an index of the prosperity of the companies. While the figures given represent all the premiums received on 1914 business, they do not include all the losses which will accrue on 1914 policies. In fact it has been estimated that the ratio of losses at present known to premiums earned will probably approximate as much as 60 per cent.

The rapidity with which the old system of employers' liability for negligence is being supplanted by laws providing for the automatic compensation for injuries presents one of the most remarkable movements in the whole field of insurance. Thus during the year 1914 four states, Kentucky, Louisiana, Maryland, and New York, enacted workmen's compensation laws (*A. Y. B.*, 1914, p. 436), while five other states, California, Connecticut, Iowa, Nebraska and Oregon, went under the new system during that year, laws previously enacted going into force. At the close of 1914, 23 states had adopted such laws. Moreover, in six of the remaining states commissions were investigating the subject with a view to recommending legislation. During 1915 ten more states and territories, Alaska, Colorado, Hawaii, Indiana, Maine, Montana, Oklahoma, Pennsylvania, Vermont, and Wyoming, have placed themselves under the workmen's compensation system. Since this type of legislation is reviewed elsewhere (see XVI, *Labor Legislation*), the following outline of the essential features of these laws will serve for this discussion:

Alaska.—Law elective; insurance optional; covers any employment in connection with mining when five or more are employed; compensation for total disability limited to 50 per cent. if temporary, and $3,600 to $6,000 if permanent. Law administered by the courts; effective July 28, 1915.

Colorado.—Law elective; requires insurance or proof of financial responsibility; covers all employments except private domestics, farm, ranch, and businesses employing less than four; compensation for total disability limited to 50 per cent. Law administered by the Industrial Commission; effective Aug. 1, 1915.

Hawaii.—Law elective; requires insurance or proof of financial responsibility; covers all employments except employees receiving certain stipulated salary, casual and purely personal employees; compensation for total disability limited to 60 per cent. Law administered by the Industrial Accident Board; effective July 1, 1915.

Indiana.—Law elective; requires insurance or proof of financial responsibility; covers all employments; compensation for total disability limited to 55 per cent. Law administered by the Industrial Accident Board; effective July 1, 1915.

Maine.—Law elective; requires insurance or proof of solvency with deposit or bond; covers all employments except domestic and agricultural labor and casual; compensation for total disability limited to 50 per cent. Law administered by the Industrial Accident Commission.

Montana.—Law elective; requires insurance in company or state fund or proof of solvency; covers extra-hazard employments except domestic, agricultural and casual; compensation for total disability limited to 50 per cent. Law administered by the Industrial Accident Board.

Oklahoma.—Law compulsory; requires insurance or proof of financial responsibility; covers hazardous employments if defined where two or more are employed, except farm, ranch, dairy and retail merchants; compensation for total disability limited to 60 per cent. Law administered by the Industrial Commission; effective Sept. 1, 1915.

Pennsylvania.—Law elective; requires insurance or proof of financial responsibility; covers all employments except family and domestic servants; compensation for total disability limited to 50 per cent. Law administered by the Bureau of Workmen's Compensation; effective Jan. 1, 1916.

Vermont.—Law elective; requires insurance or proof of financial responsibility; covers all employments except domestic servants and businesses employing ten or less; compensation for total disability limited to 50 per cent. Law administered by the Industrial Accident Board; effective July 1, 1915.

Wyoming.—Law compulsory; insurance required exclusively in state fund; covers extra-hazardous employments if defined where five or more are employed and certain especially hazardous employments without regard to number employed; compensation for total disability, limited lump sums. Law administered by the courts; effective April 1, 1915.

In addition to the foregoing the following four important events should be noted in this field of insurance:

(1) The decision of the Supreme Court of Michigan upholding the constitutionality of the workmen's-compensation law enacted in 1912. The reasoning of the court is indicated by the following extract from the opinion:

It is to be recognized at the outset that workmen's-compensation legislation of this class, based on the economic principle of trade risk in that personal injury losses incident to industrial disputes are like wages and breakage of machinery, a part of the cost of production, works fundamental changes in the familiar principles underlying and governing the doctrines of liability for negligence, as heretofore applied to the relation of master and servant.

But it by no means follows that this comparatively recent and radical legislation upon the subject, enacted to meet changed industrial conditions and afford relief from evils and defects which had developed under the old rules of law in negligence cases for personal injury of employees, violates the spirit or letter of our Constitution.

The policy importance and propriety of this legislation, in its general plan and purpose, are not open to question and we do not find it subject to the Constitutional objections urged in this record.

Reference should also be made to the fact that the Kentucky workmen's-compensation law was declared unconstitutional by the Kentucky Court of Appeals in December, 1914.

(2) The opinion handed down by Justice Kellogg of the Appellate Division of the New York Supreme Court, holding that the New York law governing workmen's compensation covers indemnity for accidents occurring outside of the state when the injured persons were employed at the time by firms within the state.

(3) The enactment of an amendment to the constitution of Wyoming authorizing a workmen's-compensation law, and, similarly, the adoption on Nov. 3, 1915, of an amendment to the constitution of Pennsylvania authorizing the passage of a compulsory workmen's-compensation law.

(4) The organization of a Compensation Inspection Rating Bureau in New York in 1914 to assist in placing the underwriting of workmen's compensation insurance in the state upon a scientific basis. The objects of this Rating Bureau are stated in its constitution to be, "(1) to make premium rates equitably adjusted to the hazard of the individual risk by means of a system of schedule rating, the debits and credits therein to be based upon inspections by the Board and upon such experience compiled by the Board as may demonstrate the existence of a human hazard not revealed by inspection; (2) to reduce the number and severity of accidents through encouragement given employers to improve conditions by the offer of reduced rates therefor." The governing committee to manage the affairs of the Bureau consists of five members, two representing stock companies, two mutual companies and one the state fund.

It should be added that the Massachusetts legislature in 1914 provided for a commission of three to inquire into the subject of rates for workmen's compensation and to report to what extent governmental regulation is advisable. As a result of this investigation a bill was recommended to the Massachusetts legislature for the establishment of a rating bureau for workmen's-compensation risks under the supervision of the state. The bill failed of passage but the insurance companies in Massachusetts, with the coöperation of the Insurance Department, have established the Massachusetts Rating and Inspection Bureau which will accumulate statistics, make inspections, and fix rates for Massachusetts risks in the future. It is an organization of both the mutual and stock companies operating in Massachusetts and is working in harmony with the Insurance Department.

Accident and Health Insurance.—The table on the following page, compiled from the *Insurance Year Book*, shows the premiums, losses and loss ratios on accident and health business for the past seven years. Judging from the statistics given these two branches of the casualty business have continued to show the same steady growth during 1914 that is reported for the preceding six years. In accident insurance the premium income increased nearly 6 per cent., the losses by 4.6 per cent., while the ratio of losses to premiums declined from 45 to 44.7 per cent. In health insurance the premium income during 1914 increased nearly 10 per cent., the losses by slightly over 8 per cent., while the ratio of losses to premiums declined from 47 to 46.5 per cent.

Burglary and Theft Insurance.—During 1914 the premium income of companies transacting burglary and theft insurance was $4,342,704, while

ACCIDENT AND HEALTH INSURANCE

	Accident Insurance			Health Insurance		
	Premiums	Losses	Ratio of Losses to Premiums (per cent.)	Premiums	Losses	Ratio of Losses to Premiums (per cent.)
1914[1]	$36,524,812	$16,304,776	44.7	$7,594,840	$3,533,656	46.5
1913	34,522,481	15,581,234	45.0	6,928,735	3,256,227	47.0
1912	29,792,473	13,408,552	45.0	6,339,406	3,126,160	49.0
1911	27,351,626	11,837,347	43.2	7,101,666	3,314,301	46.6
1910	23,894,665	10,068,926	42.1	6,451,028	2,770,744	42.9
1909	21,446,506	8,248,182	38.4	5,714,579	2,173,386	38.0
1908	19,044,634	8,104,933	42.5	4,592,365	1,859,276	40.5

[1] The statistics for 1914 are slightly in error in that the figures for a few states as reported in the *Insurance Year Book* have not been separated for the two forms of insurance.

losses paid amounted to $1,524,427, the ratio of losses to premiums thus being 35.1 per cent. The corresponding figures for 1913 were $3,949,000, $1,394,000, and 35 per cent.

Automobile Property Damage Insurance.—The premium income and loss payments for automobile insurance in 1914, as compiled from the *Insurance Year Book*, amounted to $5,804,995 and $2,125,319 respectively, thus showing a ratio of losses to premiums of 36.6 per cent.

Fidelity and Surety Insurance.—The results in the fidelity and surety branches of the insurance business during the past seven years are indicated by the following table, compiled from the *Insurance Year Book:*

	Premiums (thousands)	Losses (thousands)	Ratio of Losses to Premiums (per cent.)
1914	$21,270	$7,975	37.5
1913	20,027	6,947	34.6
1912	19,243	5,192	27.0
1911	16,958	4,980	29.3
1910	15,473	2,814	18.1
1909	13,283	3,200	24.0
1908	12,530	3,826	30.5

Since the statistics published for a number of the states do not separate the results for fidelity insurance as distinguished from the surety business, it is impossible to trace the statistics for each separately, as was done in the last issue (p. 370). The combined results show that the premium income increased during 1914 by slightly more than 6 per cent.; losses increased nearly 15 per cent.; and the ratio of losses to premiums rose from 34.6 per cent. to 37.5 per cent.

According to the press five important surety companies, American Surety Company, Royal Indemnity Co. of New York, Fidelity and Deposit Company of Maryland, United States Fidelity & Guarantee Co., and Maryland Casualty Co. of Baltimore, with a combined capital and surplus of 20 millions and total assets of 40 millions, have formed a pool for the purpose of meeting competition by issuing blanket bonds for banks similar to those furnished by Lloyds. The bonds will be signed by the abovementioned companies as cosureties, the companies thus becoming jointly and severally liable for the full amount of each bond. It is said that this group was formed to meet the competition of another group of companies which recently united for a similar purpose.

XV. SOCIAL AND ECONOMIC PROBLEMS

CONSTRUCTIVE AND PREVENTIVE SOCIAL WORK[1]

WINTHROP D. LANE

Social Settlements.—As social settlements enter upon the second quarter century of their existence in this country, progress takes the form not of the formation of new settlements but of a standardizing of work and development of technique. New federations of settlements in large cities contributed to this end in 1915. Everywhere there was increased effort to promote a neighborly type of local life through all parts of the municipality. Indeed, the importance of the neighborhood as a primary unit in community organization was emphasized alike by settlements, and the growth of social centers and neighborhood associations (see *Recreation, infra*). The settlement, long concerned chiefly with the economic and industrial conditions of its constituents, is now striving for the democratization of beauty. This was shown during the year 1915 by a growing interest, both on the part of settlement administrators and working-class people, in neighborhood music schools, theatres, and craft schools.

The settlement, true to one of its functions as the weathervane of local conditions, was helpful in recording the extent of unemployment in the early months of 1915. It also in many places sought to remedy the situation. This it did by coöperating with mayors' and other committees, by seeking better coöperation among employers, and by operating workshops for the unemployed. (See also *Unemployment, infra.*)

Settlement residents, in convention assembled, expressed the conviction that the best "preparedness" is an intelligent, resourceful, unified and comfortable citizenship, trained to grapple, public-spiritedly and loyally, with the problems of peace.

Social Centers.—No greater uniformity in the conception of a social center was observable in 1915. In New York City the tendency is to restrict the use of the term to a school building where a local association has a definite participation in the control of extension activities; elsewhere, as in Wisconsin, a social center is any place where people get together to talk over their common affairs. The phrase "community center" is widely replacing "social center."

The year registered a tremendous increase in the hospitality of school authorities toward outside agencies asking the use of school facilities, and in extension activities of the school itself. The latest available figures show that 603 cities reported some sort of special activity in connection with their school systems for the year ended June, 1914. Three-quarters of this effort went into recreation, the other quarter into activities of a cultural, civic or social character. The variety of after-study uses increased, as well as the prevalence.

Six states and the District of Columbia enacted legislation friendly to social-center usage of public buildings. Ohio provided that

> upon application of any responsible organization, or of a group of at least seven citizens, all school grounds and school houses, as well as all other buildings under the supervision and control of the state, or buildings maintained

[1] Additional topics in this field treated elsewhere in this volume include housing (see VII, *Municipal Government*); labor conditions (see XVI, *Labor and Labor Legislation*); care of immigrants (see *Immigration, infra*); prevention of defectiveness and vice (see *Social and Mental Hygiene, infra*); child welfare, recreation, and criminology and penology (see articles under these titles in this department).

by taxation under the laws of Ohio, shall be available for use as social centers for the entertainment and education of the people, including the adult and youthful population, and for the discussion of all topics tending to the development of personal character and of civic welfare.

Illinois, Missouri, Nebraska, Oregon and Oklahoma empowered school authorities to throw school property open to wider recreational, civic and educational use by both children and adults.

Self-government is on the increase among the more cohesive social-center groups. In some places, notably in New York City, this takes the form of local associations which arrange programmes, participate in the determination of policies and help bear the financial expense. This coöperation between constituency and school brings about greater local support for the educational budget, achieves a closer adaptation of regular school activities to neighborhood needs, and clarifies educational, civic and social standards and ideals. (See also *Recreation, infra;* and XVII, *Agriculture.*)

Social Surveys.—No comprehensive social survey, if we accept as the definition of such a survey "a group of interrelated investigations dealing with all the larger social problems or more fundamental social relationships," was begun in 1915. Several of those previously started, notably the surveys of Cleveland and Baltimore, were vigorously prosecuted. The survey of Springfield, Ill., made in 1914 by the department of surveys and exhibits of the Russell Sage Foundation at the invitation of the city itself, became familiar to the public during the year through the publication of reports on the correctional system, public health, recreation, the care of mental defectives, insane and alcoholics, housing, charities, and industrial conditions.

The tendency away from general surveys of the entire social life of a community to intensive studies of special subjects became marked in 1915. Thus school systems, housing, provision for health, city planning, charities and other departments of community life were studied separately in scores of places, the first three being perhaps the most frequent matters of investigation. Eight school surveys were made and reported on during the year, and the results of 12 conducted in 1914 were given to the public. For the most part these were carried on under the auspices of departments of education, though outside specialists were usually called in. This attention to special subjects has resulted in a steady improvement in the scientific character of surveys. (See also *Recreation, infra.*)

Surveys under the auspices of universities were numerous. The extension division of the University of Kansas, which has added the making of social surveys to its permanent activities, concluded a survey of Belleville and announced one of Lawrence. The University of Ohio surveyed several rural districts. The division of research in agricultural economics of the University of Minnesota made two surveys, one of the Red River Valley, the other of a rural territory in the northeastern part of the state. The University of Georgia issued a rural survey of Clarke County, with special reference to negroes. (See also XVII, *Agriculture.*)

While the United States seems to be the most fertile soil for social surveys at present, Canada is also adopting this method of taking stock of community life. The board of social service and evangelism of the Presbyterian Church and the board of temperance and moral reform of the Methodist Church have combined in making surveys of Vancouver, Hamilton, London, Fort William, Sydney, Regina, Port Arthur, and three rural districts.

Remedial Loans.—The practice of usury was further driven to cover during the year by several important court decisions. That usury is an extraditable offence was established when the manager for one of the boldest money-lenders operating in New York was brought back from Massachusetts, whither he had fled while under bail awaiting sentence, and was sent to prison. Another New York decision, from which an appeal is now pending, held that a man who, while not loaning money directly, sold jewelry on the instalment plan

at an exorbitant price, the article being used by the purchaser as security for a loan from a pawnshop, was guilty of an illegal device to evade the usury laws. The Supreme Court of Maine, where there is practically no legal limit to the rate of interest that may be charged under contract, introduced the "doctrine of reason" into the law and refused to allow a lender to collect interest on a small loan amounting to 360 per cent. per annum. In a number of cities officials were active in prosecuting usurious money-lenders, notably in Cincinnati, Cleveland, Columbus and Youngstown, Ohio, Richmond, Va., Chattanooga, Memphis and Nashville, Tenn., Paducah, Ky., and Houston, Tex. An interesting development of the year was the passage of a law in Pennsylvania requiring a semi-monthly pay day for city and county employees, and another law in Texas requiring a semi-monthly pay day for employees of mercantile, municipal and public-service corporations employing more than ten people. These came as direct attacks on "loan sharks," who have always reaped a harvest among employees paid once a month.

The higher courts of three states, Michigan, Pennsylvania and Louisiana, declared small-loan laws unconstitutional. Except in Michigan, where the law had a defective title, these decisions are not in accord with those of other states and of the Federal courts. To offset this, eight states, Oregon, Nebraska, Iowa, Texas, Michigan, Ohio, Pennsylvania and New York, passed laws designed to improve the small-loan situation. Three remedial-loan societies (Toronto, Ontario, Lynn, Mass., and Dayton, O.) were organized, bringing the total number in this country and Canada up to 39; two older ones suspended business during the year. The purpose of these societies, which aim to run on sound business principles, is to loan small amounts of money on mortgage or pledge of personal property at reasonable interest rates; a few accept also endorsed notes or salaries as security. In 1914, the latest year for which figures are available, remedial-loan societies in the United States made 850,000 individual loans, amounting to a total of $28,000,000.

The credit-union idea grew apace during the year (for a description of credit unions see the YEAR BOOK for 1914, p. 373). Laws modeled upon those in effect in New York and Massachusetts were enacted in North Carolina and Utah. These, with the laws enacted in 1914 in Texas and Wisconsin, bring the total number in effect to six. Nine credit unions began business under the New York law, making the total number in operation 11 in New York City and eight in other parts of the state. Among these groups are employees of telegraph, insurance and manufacturing companies and members of fraternal organizations and neighborhood groups. Massachusetts, where credit unions have been longest in existence and which had 40 in 1914, had 60 in November, 1915. One of the new ones comprised the city employees of Boston, with the mayor as president.

Prevention of Tuberculosis.—Though the fight against tuberculosis, which enters the field of social work because of its frequent complication by poverty, received little legislative aid in 1915, several notable things were done. Michigan voted $100,000 for a two-year investigative and educational campaign on the social aspects of tuberculosis, the largest single appropriation for educational purposes the movement has yet received in this country. The money is to be spent by the state Board of Health as it sees fit; the Board has already begun to make extensive surveys of the tuberculosis problem in selected districts and will follow these with programmes for county hospitals, nursing and other machinery. In California the state Bureau of Tuberculosis was given enough money to put it on an adequate working basis, and state subsidies were granted to county tuberculosis hospitals. Missouri brought herself to the front rank in the fight against the disease by providing for state-aided county tuberculosis hospitals, by permitting city councils and county courts to employ visiting nurses for tuberculosis cases, and by providing for the suppression of dust, for sanitary devices and for

adequate bathing facilities and dressing rooms for miners in the extensive lead and zinc mines in the south and southwest part of the state. Virginia and Alabama created tuberculosis commissions, the former to study and report, the latter to study and direct local tuberculosis work. The principle of the county tuberculosis hospital was recognized in the Alabama law.

The wisdom of appealing to the public in the fight against tuberculosis was demonstrated by the success of the referendum. At the fall election in New York five counties voted to spend a total of $225,000 for county tuberculosis hospitals. This action was taken after the county supervisors in each county had refused to authorize the hospitals. A referendum produced a $100,000 county hospital at Joplin, Mo., the first in the state, and another popular submission provided for a large corps of municipal tuberculosis nurses in Los Angeles, Cal.

More intensive study of special aspects of the tuberculosis problem, such as the menace of the disease to the southern negroes and to the industrial populations of New England, was made possible by the holding of four sectional conferences in addition to a national gathering. These were at Indianapolis, Ind., Columbia, S. C., Albany, N. Y., and Springfield, Mass. New state associations were put on a working basis in Iowa, Oregon and Idaho, bringing the number of states and territories having some sort of state organization up to 50. Of interest in this connection were the studies into interstate migration of consumptives made by the U. S. Public Health Service, which showed that at least 10,000 indigent consumptives go from other sections into the South and Southwest every year to seek cure.

Increasing effort was made during the year to interest the general medical practitioner in the anti-tuberculosis campaign. Each of the sectional conferences referred to above held clinics on the early diagnosis of the disease. The National Association for the Study and Prevention of Tuberculosis set committees at the tasks of preparing a handbook for physicians, a standard course for medical colleges and another for nurses' training schools. It also set aside a fund to aid medical research. An effort to muster organized labor into the fight took the form of a committee appointed for this purpose by the National Association.

The standardization of methods used by dispensaries, associations and sanatoria is a perennial object of those leading in the fight against this disease. Out of 450 tuberculosis dispensaries in the country to-day, probably not fifty are getting reasonably efficient results from the time and money expended. A handbook on standard dispensary methods was issued by the National Association for the Study and Prevention of Tuberculosis. The Association joined during the year in the effort to establish a day for annual medical examination of every adult man and woman in the United States, designating Dec. 8 for the purpose.

The sale of Red Cross Christmas seals, which finances 90 per cent. of the work of private associations throughout the country, yielded $550,000 at the end of 1914, a gain of 22 per cent. over the amount raised in 1913 and the largest sum yet secured in this way.

Hospital Social Service.—The tenth anniversary of the establishment of a social-service department in connection with a hospital in this country was celebrated in 1915 at the Massachusetts General Hospital, where the work began. Hospital social workers from St. Louis, Indianapolis, Baltimore, Philadelphia and New York City met to discuss the organization of social-service departments, the relation of social service in hospitals to the training of nurses and the obligations of the hospital social worker to the community social worker.

The year witnessed a development in technique and standards of work, rather than an extension of activity. One notable advance into new territory was made, however, by the establishment of a social-service department at the Charity Hospital in New Orleans. The University Hospital of Minnesota has established a social-service department that will have a

close relation to the various university activities.

Pupil nurses are being offered increased opportunities for experience in social service, and there has been a further development of social training for medical students. A unique experiment is being tried at Barnes Hospital, St. Louis, where Miss Julia Stimson, formerly head of the social-service department, has been made head of the departments of nursing and social service, with the object of correlating these two services. The social-service department of the Massachusetts Charitable Eye and Ear Infirmary has become affiliated with that of the Massachusetts General Hospital.

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CHILD WELFARE

LAURA A. THOMPSON

Protective Movements.—The most significant feature of the year in child welfare was a growing insistence on the need of systematically reviewing, correlating and revising the laws relating to children, with a greater emphasis upon standards in all child-welfare work. In Missouri, at the request of the state Committee for Social Legislation, the governor appointed a commission to revise the laws of Missouri relating to children and prepare a complete children's code to present to the next legislature. This commission, which consists of 21 members, with Judge R. E. Cave of the St. Louis Juvenile Court as chairman, will work in close coöperation with the departments of sociology, political science and law of the state university. In Minnesota, efforts to secure a similar commission by legislative enactment were unsuccessful, but it is expected that a voluntary committee will be named. A child-welfare commission was appointed by the governor in Montana. In New Hampshire the Children's Commission, provided for by law in 1913, made its report early in the year, but its principal bill, to establish a state board of children's guardians, failed of final adoption. An important child-welfare act was secured in New Jersey, which rounds out and makes more effective earlier laws for the protection of children. Among the important developments of the year in constructive planning for children's needs should be mentioned the movement for a national children's charter, which should set forth the principles and define the standards in each field of social work for children. The plan was discussed at the National Child Labor Conference in January, and at a meeting at the National Conference of Charities in May, a temporary organization was effected for the purpose of drawing up such a charter, with C. C. Carstens of the Massachusetts Society for the Prevention of Cruelty to Children as chairman of the committee.

The Children's Bureau.—During 1915 the inquiry into infant mortality, described in the last issue of the YEAR BOOK (p. 375), has continued to be the most important investigation of the Children's Bureau. Field work was completed in New Bedford, Mass., Waterbury, Conn., and Akron, Ohio, and begun in Baltimore. Publication was made early in the year of two sections of the inquiry, the surveys of Johnstown, Pa., and Montclair, N. J. The Johnstown report showed a high rate of infant deaths coincident with neglected streets and insanitary housing. In the poorest section of the city, where sanitary conditions were at their worst, babies died at the rate of 271 per thousand infants, a rate more than five times

that of the choice residential section. The report further found that the deaths of babies investigated were in inverse proportion to the earnings of their fathers. Babies whose fathers earned less than $10 a week died at the rate of 256 per thousand; those whose fathers earned $25 or more a week died at the rate of 84 per thousand. In Montclair, N. J., in the ward where the most favorable conditions for living exist, the infant death rate was 39 per thousand, while in the ward where most of the tenement houses of the city are found, the rate was 130

Infant Health.—The stimulus to local effort of the Federal investigation was strikingly shown during the year in Johnstown. Immediately upon the publication of the report on that city the local chamber of commerce named an infant-mortality committee with the avowed purpose of making the health conditions surrounding the children of Johnstown as good as those of other cities. A vigorous campaign for civic improvement was prosecuted. The infant-welfare work carried on by the Associated Charities in coöperation with the health board during the summer of 1915 resulted in a substantial decrease in the number of infant deaths. Throughout the country reports showed a steady advance in infant-welfare activities. In the spring of 1915 there were in the United States 462 infant-welfare stations, of which 290 were maintained by private organizations in 92 cities, a big gain over 1914. Especially noteworthy was the increase in activities of city departments of health, at least 20 of which now have divisions of child hygiene. Little mothers' classes were conducted by the municipality in 40 cities in 1915. Successful "baby weeks" were held in Detroit, Grand Rapids, Indianapolis, Pittsburgh, Topeka, Yonkers, and several other cities. In Pittsburgh three floors of the Wabash Railroad station were used for exhibits and motion pictures, while in every district of the city talks or illustrated lectures were given in parks, schools, churches and department stores. Birth registration was popularized by boy scouts, who distributed bannerettes to homes in which were babies under one year whose births were officially registered. The success of "baby week" as a form of community campaign has led to plans being made by the General Federation of Women's Clubs with the coöperation of the Children's Bureau for a nation-wide baby-health week to be celebrated early in 1916.

One of the most important legislative advances of the year was the creation of a division of child hygiene in the Kansas State Board of Health, with duties to include "the issuance of educational literature on the care of the baby and the hygiene of the child, the study of the causes of infant mortality and the application of preventive measures for the prevention and the suppression of the diseases of infancy and childhood." Steps are being taken toward the organization of a similar division in Ohio. The new division of publicity and education in the Massachusetts State Health Department is also expected to devote special attention to infant welfare. Other legislative gains were the adoption of the "model" birth-registration law in California, Florida, Illinois and Oregon, and laws for the prevention of blindness by regulating the treatment of newly born infants' eyes in California, Illinois, Nebraska, New Hampshire and Oregon. The New York State Department of Health through its division of child hygiene continued its programme of showing, in addition to the traveling exhibits in cities, special exhibits dealing with rural hygiene at the county fairs through the state. As a result of this campaign in the small towns and rural districts the infant death rate for the first seven months of 1915 showed a marked decrease over 1914. An interesting experiment was inaugurated in California in a law providing for "home teachers" to work in the homes of the pupils and give instruction in the English language, sanitation and home economics.

The Children's Bureau was represented at the Panama-Pacific Exposition by a child-welfare exhibit consisting of a series of panels, models and electrical devices showing the needs of children of various ages. The

care of the baby was shown in a motion-picture film, and another film illustrated the difference between a good and a bad child-labor law. There was also a model playground and an exhibit of toys made by children. But the center of attraction was the Children's Health Conference where individual children were given physical examination. So popular was the conference that children were booked for examination months in advance. The aim of the conference was to show the physical condition of the children brought for examination and to indicate defects or tendencies needing attention. By eliminating the competitive element of the baby health contest, the conference tended to induce parents to bring the children who are most in need of special guidance.

Dependent Children.—The most important act of the year affecting dependent children was the law passed by the New York legislature providing for local boards of child welfare in each county to grant allowances to widowed mothers with one or more children under 16 dependent upon them for support. The law enacted is more conservative than that recommended by the commission reporting on the subject in 1914 (*A. Y. B.*, 1914, p. 376) in that the allowances may "not exceed the amount or amounts that it would be necessary to pay to an institutional home" for the care of the children. It must also appear that "if such aid is not granted the child or children must be cared for in an institutional home." Appropriations, which are not compulsory, are to be made by the county boards of supervisors—in New York City, the Board of Estimate and Apportionment and the Board of Aldermen. In Greater New York the estimates for 1916 are for an expenditure of $483,000 for relief and $36,000 for expenses. The number of applications received in the five boroughs numbered 3,166, with 9,204 children to be benefited.

During the year six other states, Kansas, Montana, North Dakota, Oklahoma, Tennessee and Wyoming passed laws providing aid to mothers for the care of dependent children in their own homes. In addition, Florida and Indiana made provision for commissions to investigate the subject. The long list of states which now have "mothers'-pension" laws reveals a very general popular conviction that homes and not institutions furnish the normal environment for all children and that wherever possible family life should be maintained. It is significant that although a number of states passed amendments to existing "mothers'-pension" laws during the year, in only one, Washington, was any attempt made to repeal the law entirely. Objections to the law in that state were met by changing the residential requirement from one to three years and excluding mothers abandoned by their husbands. Among other legislative changes of the year with respect to dependent children should be mentioned the adoption of the model desertion and non-support law by Alabama and Vermont, and amendments to the non-support laws of Idaho, Illinois, Indiana, Oklahoma, Tennessee, Virginia and Wyoming. In Maine the law permitting mothers to bind out illegitimate children was repealed and an act passed requiring the licensing of all children's homes, whether free or boarding, not already under the supervision of the state Board of Charities. The regulations regarding boarding homes were strengthened also in North Dakota, while in New Jersey municipalities were given power to pass ordinances to regulate children's boarding homes through local boards of health.

Juvenile Courts.—With respect to juvenile courts one of the most important developments of the year was the complete revision of the juvenile-court law of the District of Columbia, prepared by the special committee appointed by the Attorney-General of the United States. The committee in its report indicted in vigorous terms the present law of the District, which still holds juvenile offenders as criminals and under which over 4,000 children with a "criminal" record in the juvenile court stand disqualified as citizens from performing jury duty and from holding public office. The act proposed by the committee does away with all the criminal features of the present juvenile-court laws and puts it squarely on a civil basis. Its passage is to be urged upon Congress

during 1916. The report is of interest to juvenile courts generally because of the annotated references to court decisions upholding the various principles of the proposed act.

At least 18 states in 1915 passed laws dealing with juvenile delinquency in some form. A measure of prime importance was the law passed in Alabama providing a juvenile court in each county of the state. In Rhode Island a new juvenile-court act substituted civil proceedings for the older process of criminal trial and was made state-wide in application. North Carolina, Porto Rico and West Virginia adopted juvenile-court laws for the first time. In Florida the first separate juvenile court was established and provision made for a detention home for children in each county of the state. Provision was also made for an industrial school for girls to be built on the cottage plan. The arrest of Judge Lindsay of the Denver Juvenile Court on the charge of contempt of court and of conniving at the commission of perjury in refusing to divulge information supposedly in his possession through a confidence made in the Juvenile Court has raised the issue as to whether or not juvenile-court confessions are privileged. The final decision of the case will be awaited with much interest as it is of vital concern to all juvenile courts.

Defective Children.—The importance of the question of mental defectiveness in child welfare because of its close relation to the problems of dependency and juvenile delinquency was shown in a number of reports during the year. The New Hampshire Children's Commission found 262 feeble-minded children among the 1,248 children tested in the orphanages of that state and a large percentage of feeble-minded children at the State Industrial School. The report of the Federal Children's Bureau on "Mental Defectives in the District of Columbia," where no institution for the feeble-minded exists, showed 798 persons in need of institutional care, 272 of whom were children under 15. As part of a larger investigation into child needs in Delaware the Children's Bureau has begun a state-wide study of the problem of mental defectiveness in that state to secure data on the social cost of failure to provide institutional care. (See also *Social and Mental Hygiene, infra.*)

Of special interest to schools for the blind were the experiments made by the superintendent of work for the blind in the public schools of Cleveland in the use of the Binet system for testing the mentality of blind children. All questions of visual concept had to be eliminated and new ones based on other senses devised to take their place. The new series had also to be standardized for different ages to allow for the different rates at which the faculties of blind children develop. Tests have been made in a number of schools for the blind and a special class for blind feeble-minded children has been started in Cincinnati. During 1915, laws for the compulsory education of blind children were passed in New Mexico and Vermont, and special provision for the education of blind and deaf children and for children of defective speech was made in Minnesota. During the year also Iowa and Texas were added to the short list of states which have made provision for crippled or deformed children. In Texas the Walter Colquitt Memorial Children's Hospital, which had been maintained by the Texas Public Health Association, was taken over by the state, and will provide free treatment to crippled children and to those suffering from diseases that would cause them to become crippled or deformed.

Child Labor.—With the passage of the Palmer-Owen bill by the House of Representatives in February by a vote of 233 to 43 and its favorable report by the Interstate Commerce Committee of the Senate, it seemed for a time that the efforts to secure a Federal child-labor law were to reach success in the Sixty-third Congress. But in the congestion of the closing days of the session the bill did not come to a vote. In state legislation perhaps the most striking gains were made in Alabama and Pennsylvania, although important changes were made in a number of other states, details of which are

given elsewhere in this volume (see XVI, *Labor Legislation*). The child-labor legislation of the year was further strengthened by the adoption of compulsory-education laws in Alabama, Florida, South Carolina and Texas. An interesting addition to workmen's-compensation laws was made in Massachusetts in an act providing that in cases of injuries to a young person the possibility of future increases in his wages might be taken into consideration in determining the amount of compensation. The Children's Bureau published during the year an exhaustive study of the child-labor legislation of all the states and a report on the administration of child-labor laws in Connecticut. Other reports are in progress, including one on street trading, particularly of newsboys.

RECREATION

ROWLAND HAYNES

General Summary.—The year 1915 was distinguished in the field of public recreation by the passage of much important legislation, especially state laws making available funds for recreation purposes. The year was also noteworthy for the installing of the first state recreation commission. The U. S. Supreme Court unanimously sustained motion-picture censorship. The movement for community centers has shown marked growth, both in the use of school houses and also of special buildings for such purposes, and the first civic secretary paid from public funds was inaugurated. Courses in play and recreation at Harvard University, the forming of an intercommunity sing-fest association, and the advocacy of a recreation commission to solve the preventive problems disclosed by a vice commission are also significant occurrences of the year.

Reports gathered by the Playground and Recreation Association of America for the year ending Nov. 1, 1915, show 432 cities maintaining 3,294 playgrounds and recreation centers, with 7,507 leaders and workers, not including caretakers, and total expenditures of $4,066,377. About one-fourth of these cities report year-round work employing about one-seventh of the total number of leaders listed.

Legislation.—Nine states passed general laws affecting administration of recreation facilities or purchase of property therefor. This was in addition to special legislation allowing certain cities to make particular developments.

Special taxes for recreation purposes are permitted by laws passed during the year in Illinois, Kansas and Oklahoma. The Kansas and Oklahoma laws affect first-class cities and give the spending of the money to the boards of education. In Illinois two laws were passed, one affecting cities of less than 180,000 population and providing for playground boards, the other affecting cities and villages of less than 50,000, permitting on referendum the park-maintenance tax to be an additional levy. Several states passed laws permitting the expenditure of public funds for recreation purposes, although no special tax was provided. In Iowa the expenditure of money for playgrounds was authorized on referendum and a favorable vote requires the provision of maintenance funds. In Maine chartered villages are permitted to spend money for the improvement of parks and playgrounds. In Massachusetts towns as well as cities are permitted to purchase playgrounds and to construct and maintain recreation buildings.

Four states passed laws affecting the administration of public recreation. In Illinois two laws were passed, one permitting school boards to administer such activities, the other providing for special playground boards. An Oklahoma law follows closely that passed in Wisconsin four years ago and centers the administration of recreation activities in the hands of the school board, both on school and other public facilities. In first-class cities of Kansas, likewise, the school board is permitted to administer recreation activities on any public property. In Oregon civic centers for supervised recreation and public discussion are

ordained by legislative fiat "for each school house in the state," expenses to be provided from school funds and the management vested in the school board.

The first stage of recreation legislation in any state is usually to pass a law permitting the use of school property for playground and recreation purposes. This stage had been passed in many states before 1915, and Missouri, Nebraska and several other states passed such laws during the year. By the Missouri law the school board is permitted to furnish light, heat and caretaking free. In Nebraska a rental to cover expenses is exacted. It is interesting to note that several cities of Missouri were giving this free use of school buildings before the permissive law was passed. (See also "Social Centers," *infra;* and *Constructive and Preventive Social Work, supra.*)

Some duplicating legislation appeared which is likely to lead to later confusion. Attention has already been called to the two Illinois laws, one permitting school boards to manage recreation activities, the other providing for special boards. In Iowa a law was passed duplicating that of two years ago in the same state. The 1913 law placed the management of recreation in the hands of the school board, permitting a special tax therefor. The 1915 law provides for management of playgrounds by the city council.

Administration.—So far as shown by the practice of cities in 1915 there does not seem to be distinct progress toward any one of three forms of administration to the exclusion of others. These three forms are (1) by a recreation commission, (2) by the school board, and (3) by the park board. In 1915 each form has been adopted in some cities. In Detroit a Recreation Commission in which is centralized the supervision of recreation activities in both school and park properties began operations in July with an available appropriation of over $200,000. In New York City the Recreation Commission which has for some years administered a few facilities advocated its own abolition and the creation of a committee on recreation of the Board of Estimate and Apportionment, to coördinate the recreation work of the education and park departments by control of recreation appropriations. It advocated the turning of its own administrative work over to school and park departments. The Commission was abolished, and the work turned over to the other departments, but the recreation committee of the Board of Estimate and Apportionment has not yet been appointed. In San Francisco the Board of Education adopted a plan for a department of physical education, athletics, social and lecture centers, to handle physical education in the school programme and the other activities after school. In Minneapolis, St. Paul and Rochester, N. Y., the recreation work has been centered in the park departments. Omaha adopted the same principle, but put the recreation supervisor under the city commissioner having charge of the parks. The Illinois legislature passed a law to submit to the voters of Chicago in 1916 the consolidation of their eleven park boards into a single park department.

Out of this various practice in American cities, two tendencies seem to be emerging. The first is to place the responsibility for developing recreation activities for the entire city in the hands of some one person or recreation superintendent, whose duty it is to build up a system capable of handling all the public recreation needs of the city. The second tendency seems to be to adopt one of two main types of administration, either a centralized type or the federated type. In the centralized type all the supervision is centralized in the hands of one board, such as a special commission, as in Detroit, or the school board, as in Milwaukee, or the park department, as in Omaha. In the federated type, each department handles some separate part of the work, which is definitely divided to avoid duplication.

In California the first state Recreation Commission was provided for by legislation passed during the year. The work of this commission is to promote the development of public recreation throughout the state, not to have the executive control of any facilities.

Motion Pictures.—In the motion-picture field the most important occurrence of the year on the legal side was the unanimous decision of the U. S. Supreme Court sustaining the Ohio and Kansas statutes for official censorship of films before exhibition. In Pennsylvania the powers of the state Board of Censorship have been enlarged to enable them to delegate the viewing of films. The New York Court of Appeals decided that cities in that state could not prevent Sunday exhibitions of motion pictures, the regulation of Sunday observance being a state and not a local matter.

Chattanooga during the year passed an ordinance forbidding the exhibition of films not approved by the National Board of Censorship, while some other cities have created commissions which may compel films not passed by that Board to be reviewed by them. A model ordinance of similar purport was presented to the Conference of Mayors in New York State. In Massachusetts the exhibition of a film stirring up race feeling led to the passage of a law permitting the suppression in Boston of any film, by a board consisting of the mayor, police commissioner, and chief justice of the Municipal Court. This, however, was created as a board of appeal rather than as a board of censorship of films before exhibition.

On the constructive side of control, one of the significant events of the year has been the publication by the National Board of Censorship of lists of films especially adapted to the family group and to children under 16 years of age. Owing to the peculiar conditions of the motion-picture business, whereby a film to be successful must go through the regular channels of distribution, films are neither made nor exhibited with a view to their adaptability to particular audiences. Over this obstacle most censorship plans have stumbled. They have either ruled out many films because they would be harmful to a small part of the audiences, or they have passed almost everything regardless of the possible harm to younger people. Some feel that the problem will only be solved when special programmes are planned for children. These periodical selections by the National Board from the current productions of the film manufacturers make it possible for such programmes to be arranged.

Special Theatres.—The year has seen the opening of several theatres for special groups. In San Francisco a children's theatre was opened under the auspices of the Recreation League. This theatre aims to give children's plays, with best seats at ten cents reserved for children, although adults are charged more. Early in the year the Neighborhood Playhouse was opened in New York. This was the outgrowth of festival classes at one of the social settlements. Its purpose is to become a community playhouse, identified with the interests and traditions of the neighborhood. Besides plays given by neighborhood players on certain evenings, it plans to parallel the movie-vaudeville programmes by daily continuous performances. At another settlement in New York was developed during the year the "portmanteau theatre," which can be packed in ten boxes and set up in a couple of hours, and makes possible performances in ordinary halls without elaborate special construction. In Hartford a theatre social center has leased a building in a congested district. Carefully censored motion pictures are to be given here, special programmes for children's matinées, and illustrated stories, while the other rooms of the building are used for classes and dormitories.

Social Centers.—The wider use of school buildings as neighborhood and community centers has been in progress for several years. The last year has seen several illustrations of the same idea carried out in other than school buildings. Rowan County, North Carolina, has turned its old court house into a community building. The same has been done with an old court house in Green Bay, Wis., where the center is largely supported by rentals of the hall. In Ossining, N. Y., an old Y. M. C. A. building has been turned into a community building used for recreation and many other purposes, the support coming from rentals and memberships in a community association. In some places churches have put up

the community buildings. In some of these cases the church owns the building, but has turned its management over to a community association.

The school community centers during the year have shown marked growth in number and popularity. In Wisconsin alone, during the year ending in June, over 800 school houses were reported as employed for community uses out of school hours, each averaging 18 meetings a year. More than a fourth of these school houses are reported as being equipped with gymnasiums, compared with less than one-twentieth so supplied two years ago. Neillsville, Wis., through its Board of Education, has employed a civic secretary, part of whose duties are to develop recreation, as well as the business and municipal interests of the city.

The effect of offering the free use of school buildings for community purposes has been shown in St. Louis, where the fees for such use were removed in 1914. The out-of-school use of the buildings in that city more than doubled. In less than four months ending March, 1915, the school houses were used for over 700 meetings, averaging an attendance of about 125 at each meeting, at a cost of less than 2½ cents per person attending. So popular have these centers become, that a proposal to return to the fee system on the plea of lack of funds, was defeated. (See also *Constructive and Preventive Social Work, supra.*)

Recreation Surveys.—Five recreation surveys were published during the year. The report of the California Recreation Inquiry Commission, submitted to the governor late in 1914 and published in 1915, is significant as the first attempt to survey the recreation problems of a state. The recreation survey of Madison, Wis., follows the general method of previous surveys but is distinguished by its map reports, which show the location of the home of each child indicated by age groups and the amount of space on each lot covered by buildings. The survey of Springfield, Ill., is marked as showing the needs of a middle-sized city where these needs are not forced on the attention by obvious over-crowding. The survey of Ipswich, Mass., is noteworthy as being the first careful stock-taking of the recreational life of a small industrial town of 6,000 population. The report on recreation in Charlotte, N. C., is the first published recreation survey from a southern city. Surveys of Washington, D. C., and Fort Worth, Tex., are completed but not yet published.

Rural Communities.—The three principal centers, other than the home, for rural recreation are the school, the church, and to a much smaller degree, the club or community center previously described. The effect of legislation passed during the year in making possible extensions in recreation through rural schools has already been pointed out. On the church side, there has been a growth of leadership both in opening community houses and in the observance of special occasions. Some churches have conducted rally days for community interests, where recreation was furnished for the day and discussions of crop improvement held. The Amherst Agricultural College repeated its summer school of rural social service for ministers, and closed its sessions with a conference on rural organization.

A farmer's club, free to farmers and their families through the country but closed to city dwellers, had its new building dedicated by the Secretary of Agriculture. This is held to be the first club-house of its kind in the country. (See also XVII, *Agriculture.*)

Instruction.—As the need of trained leadership for the success of public recreation activities becomes apparent, the number of training schools and courses is gradually increasing. In 1915 the Division of Education of Harvard University introduced two courses on play and recreation as related to education. In New York a Training School for Community Center Workers was announced with special emphasis on practice work in conducting school neighborhood centers. Of a similar nature was the course on social service and the public school, offered for the first time during the year by the Jewish Chautauqua Society.

Community Singing.—Community singing has shown a marked develop-

ment during the year. Oregon, and especially Portland, has seen the spread of such public choruses. In western New York enough community choruses have been organized to start an inter-community sing-fest association, which held its first sing-fest at Rochester with a two-day programme. The unique feature of the Rochester chorus is that it is based on the assumption that any large group of people can sing; hence all who enjoy singing are invited to join. Thus the chorus becomes a form of public recreation as well as a civic movement. Of a different type, but based on the same idea that most people like good singing, has been the introduction during the year of open-air concerts by operatic stars in certain of the parks of Brooklyn.

Recreation and Vice.—That wholesome recreation is the best antidote for vice and delinquency has long been the contention of social workers. This idea has received official notice during the year in the report of the Louisville vice commission, which recommends definite extensions to the public recreation system of the city as a means of vice prevention. In New York an experiment was tried for cutting down election night delinquency and damage from fires. The police, coöperating with the school community centers, gave entertainments in two school buildings. The arrests for building fires were reduced more than half in those districts, and pavement damages amounting to thousands of dollars were prevented. (See also *Social and Mental Hygiene.*)

Recreation Congress.—A Recreation Congress was held at the Panama-Pacific Exposition, which was marked by its emphasis on the international growth of the recreation movement. The effect of play habits on national traits in China and Portugal was described, and the spread of new forms of public recreation work in South America, India and the Far East was reported. The American contributions were largely on the effect of recreation on labor conditions, as seen by the fight for leisure by laboring classes, and the provision of welfare activities by manufacturers.

Miscellaneous Activities.—Several new ideas or extensions of old ideas have appeared during the year. They are not any one of them significant of special movements, as those noted above, but rather indicate the variety of the growth of recreation methods. Boston has inaugurated free motion-picture exhibitions under the park department, with varied and attractive programmes. In Baltimore the public-school athletic league contests have been extended to counties by state appropriation. In Chicago the Department of Public Welfare has operated public dances with paid admissions, in addition to the free dances in the city gymnasiums. Open-air dancing on asphalt pavements has grown in favor; this was started in San Francisco some years ago, and during the year it was tried in New York in more places than before. One block in New York City has, through private initiative, treated its recreation problem as a unit. Back-yard fences have been leveled and a general playground for the neighborhood organized. St. Louis held its first "play day," when especially large numbers were drawn to all the public recreation facilities.

The increased use of park areas throughout the country for active recreation is shown by a change in park reports. Formerly they were almost exclusively filled with records of landscape improvements. Park reports summarized in 1915 contain more figures of playground activities than ever before.

SOCIAL WORK OF THE CHURCHES

Clinton Rogers Woodruff

Federal Council of the Churches of Christ.—The most important social work of the Federal Council of Church of Christ (Rev. Charles S. Macfarland, 105 East 22nd St., New York, secretary) continues to be the consolidation and coördination of the various church and denominational movements, through the secretarial council (*A. Y. B.*, 1914, p. 382). It also works in close relationship with national agencies for social reform.

It is particularly interested in a proper observance of Labor Sunday. Reports on the industrial situation in Michigan and Colorado and at Lawrence were prepared during the year in conjunction with local bodies. A report on the Paterson, N. J., situation is shortly to be published (*A. Y. B.*, 1914, p. 383). Through the Washington office (in charge of Dr. H. K. Carroll) a movement for the promotion of the religious and moral welfare of the soldiers and sailors is carried on. An exhibit was maintained at the Panama-Pacific Exposition. "Increased Christian Efficiency" is the object of a new department, the outgrowth of a conference held in Atlantic City in June.

Joint Commission of the Episcopal Church.—During the year the Joint Commission of the Episcopal Church (Rev. F. M. Crouch, 281 Fourth Avenue, New York, secretary) has made consistent progress in educating and organizing the Church in province, diocese and parish for effective social action in coöperation with similar agencies of other communions and with secular agencies of social and moral reform. Social-service boards or commissions have now been appointed by the eight provinces into which the American church has been organized and by 80 dioceses and missionary districts. An increased number of parishes have also been organized for community service. During the year a systematic financial campaign has been undertaken with the aim of securing eventually the support of the Church at large, as authorized by the General Convention of 1913. Upwards of 30 dioceses and missionary districts have already either paid or pledged an apportionment to the Commission's work equivalent to one per cent. of the regular missionary apportionment, and it is hoped that others will follow their example. Substantial individual contributions have also been received.

In order to ascertain more fully just what has been accomplished or is planned by these various social agencies of the Church, the Commission has prepared a set of questionnaires which are designed especially to reveal the "community affiliations" of individual clergy and lay members. The aim of the survey is twofold, (1) to ascertain just what social work is already being done by church members, and (2) to stimulate other church members to volunteer for service. This "church-wide social survey" will be carried on through the medium of the provincial and diocesan commissions. The Commission has also issued and distributed the following literature: "What the Joint Commission on Social Service Has Accomplished"; announcements of a correspondence course for parish workers in industrial communities (prepared for the use of the General Board of Religious Education), and of stereopticon lectures, with descriptive text, on the social work of the Episcopal Church; a semi-annual report (under date of May 5, 1915), and two pamphlets, "Some Leading Community Churches" and "The Layman's Opportunity for Social Service."

Congregational Commission.—The Social-Service Commission of the Congregational Church serves as the executive agency of the denomination in the interests of industry, rural life, social service, organized charities and men's work. A separate commission on social purity is maintained. Definite campaigns were arranged in which the secretary (Rev. Henry A. Atkinson, 14 Beacon Street, Boston) participated in the south and west, through New England and in the Middle West. Special local campaigns, surveys and investigations were carried on. A volume on "The Church and the People's Play" was written by Mr. Atkinson and published by the Pilgrim Press.

Baptist Social Service.—The social-service commission identified with the Northern Baptist Convention has appointed a series of departments to deal with the questions of rural communities, immigration, temperance, social hygiene, the home and child, industrial problems, peace and national security. These departments are to make special studies and prepare reports and recommendations. A book on the rural church has already been prepared. Social service has now become an accepted item in the whole educational programme of the Baptists. Each state convention has created a social-ser-

vice commission to stimulate interest and to coöperate with the general department. Many churches are taking seriously their social mission and are organizing their forces for efficient service. Many have introduced social studies in the Sunday school, the adult classes and young people's societies. Many are coöperating fully with the agencies of social redemption in their communities. An ever increasing number are becoming socialized churches and in various ways are endeavoring to meet the social needs of the people. The Department maintains headquarters in the Roger Williams Building, Philadelphia, with the Rev. Dr. Samuel Zane Batten as secretary. In addition to the office and editorial work, the secretary spends a considerable part of his time in the field, visiting churches, colleges and seminaries and serving as an instructor in the workers' institutes.

Other Denominations.—The Disciples of Christ maintain a social-service department known as the Department of Social Service and Rural Life; the secretary is Prof. A. W. Taylor. The Society of Friends created a social-service board in 1912 of which Allen Hole, Richmond, Ind., is secretary. In the Lutheran Church there is no formal social-service organization, but considerable social work is carried on by the Inner Mission; the secretary is Rev. F. S. Kuntz, 2254 N. Camac Street, Philadelphia. The Unitarian Department of Social and Public Service has its office at 25 Beacon Street, Boston, Elmer S. Forbes, secretary. Roman Catholic social work is largely in the hands of a commission of the American Federation of Roman Catholic Societies, Rev. Peter E. Dietz, Hot Springs, N. C., secretary, which has shown particular interest in the industrial phases of the social problem.

IMMIGRATION

Frank Julian Warne

Immigration During the Fiscal Year.—The smallest volume of permanent immigration to the United States of any year since 1899 is recorded by the Federal Bureau of Immigration for the fiscal year ending June 30, 1915. The number of total aliens arriving, including temporary or non-immigrant arrivals, was 434,244. This is 968,837 less than came during the preceding fiscal year, the decrease being 69 per cent. The cause of this striking decrease is, of course, the European War. During the same period there emigrated from the United States to foreign countries a total of 384,174. This is 249,631 less than the emigration of the preceding fiscal year. This effect of the war in reducing the number of outgoing aliens thus kept in the country many immigrants who ordinarily would have returned to Europe. Every one of the twelve months of the fiscal year 1915 with the single exception of August, 1914, showed less emigration than the respective months of the preceding year and, excepting July and August, less than in 1913. The number of departing aliens was 169,379 less than the average for the past seven years. This retention in the country of immigrants who otherwise would have returned to Europe explains in part the unusual seriousness of the unemployed problem which was so acute in our large eastern and middle-western cities in the winter of 1914 (*A. Y. B.*, 1914, p. 408). Thus, both immigration to and emigration from the United States rapidly declined following the outbreak of the war. Immigration in April, 1915, was less than one-fourth the amount in April, 1914, a decrease from 142,207 to 31,765 in arrivals, and significant because of the fact that April marks the spring flood tide of the immigration movement. Emigration had decreased from 50,234 in April, 1914, to 17,670 in the same month of 1915. During August, November, December, and January of the last fiscal year immigrants leaving the country exceeded those arriving by 34,243. All this is explained in the fact that the war involved the sources of the larger part of our recent immigration, more than four-fifths of the immigration from Europe in 1914 coming from Italy, Austria-Hungary and Russia.

Of the much smaller volume of immigration for the last fiscal year, Italians were the most numerous, their proportion being 18 per cent., or 57,217. English came next with a proportion of 12 per cent., or 38,662. Hebrew immigrants numbered eight out of every one hundred, with a total of 26,497. Scandinavians, Irish, Germans, Greeks, Scotch, and French came next in this order of importance. Poles, Russians, Magyars, Croatians and Slovenians, Ruthenians, Slovaks, Roumanians, Lithuanians, Finns, and Bohemians and Moravians, all of which races were of importance in the 1914 immigration, decreased strikingly in 1915. The war having so greatly reduced the volume of our immigration, an analysis of the occupational characteristics of the immigrants and their destination within the United States becomes of little importance.

Restriction of Immigration.—The one outstanding effect of the war, then, has been to reduce materially the volume of immigration and in consequence public interest in the problem has been temporarily shifted from the point of view of restriction. Efforts in this direction had approached a climax by the veto by President Wilson, on Jan. 28, of the Burnett bill "to regulate the immigration of and the residence of aliens in the United States." It will be recalled that President Wilson's predecessor, Mr. Taft, had also vetoed a similar bill in February, 1913, on account of its so-called literacy-test provision (*A. Y. B.*, 1913, p. 3). The bill passed the House of Representatives on Feb. 15, 1914 (*A. Y. B.*, 1914, pp. 4, 386) and the Senate on Jan. 2, 1915. The conference report between the two bodies was agreed to in the Senate on Jan. 14 without a roll call, and in the House on Jan. 15 by a vote of 227 to 94, with 103 members present and not voting. President Wilson's veto was recorded following a public hearing in the White House participated in by advocates and opponents of the proposed statute. The House on Feb. 4 failed to repass the measure by a vote of 261 ayes to 136 nays. The total number of votes cast was 397, passage over the presidential veto falling short of the required two-thirds by five. An analysis of this vote by political parties shows a majority of both leading parties to have been in favor of the bill, the vote standing as follows: for passing over veto, Democrats 166, Republicans 80, Progressives 14, Independent 1; for sustaining the veto, Democrats 102, Republicans 32, Progressives 2.

President Wilson's veto message rested his action on two principal points "of vital consequence." One was the provision respecting the exclusion of revolutionists, the other, that of establishing the literacy test. As to the first the President's message said: "It seeks to all but close entirely the gates of asylum which have always been open to those who could find nowhere else the right and opportunity of constitutional agitation for what they conceive to be the natural and inalienable rights of men." As to the literacy test the veto message stated that "it excludes those to whom the opportunities of elementary education have been denied, without regard to their character, their purposes, or their natural capacity." The message characterized the literacy provision as a test, not of selection, but merely of restriction, and added: "If the people of this country have made up their minds to limit the number of immigrants by arbitrary tests, and so reverse the policy of all the generations of Americans that have gone before them, it is their right to do so. I am their servant, and have no license to stand in their way. But I do not believe that they have." Notwithstanding this veto Representative Burnett has reintroduced the bill in the Sixty-fourth Congress. (See also I, *American History.*)

Problems of Assimilation.—Since the President's veto domestic events of a startling nature arising out of the European War have diverted public attention from the policy of statutory restriction of immigration and have concentrated it instead upon matters of more immediate public concern relating to the assimilation or Americanization of the foreign-born population already within the country. Among these domestic events has been an unprecedented

propaganda on the part of representatives of foreign Governments among their respective races within the United States on questions growing out of the war in efforts to stimulate loyalty to these foreign Governments so as to influence American public opinion. On no question has this propaganda been carried so far as on that of American neutrality, and in not a few instances the national Administration has been denounced and even threatened with political hostility based on racial lines. So serious did this become that both President Wilson and former President Roosevelt made public utterances on the subject warning certain elements in our foreign-born population that American allegiance must come first. The hyphenated American has all of a sudden become a matter of serious public concern to the American people. This was reflected in the parades and public protests and other forms of expression in opposition to loans to the Entente Allies floated in this country; it was most strikingly illustrated in the disclosure of efforts on the part of the Austria-Hungarian Ambassador to the United States and of sympathizers with his country and with Germany to instigate strikes among alien employees of the munition factories engaged in manufacturing ammunition and other war material for the Allies. In consequence of this, Ambassador Dumba was recalled by his Government at the request of President Wilson. (See also I, *American History.*)

These signs have aroused the public to an appreciation of the necessity for greater efforts and more intelligent action looking to the assimilation of our foreign-born. As a result an impetus has been given to means and measures and institutions designed to aid in this task, such as educating the immigrant in the use of the English language, bringing him into closer touch with Americanizing influences, accomplishing his naturalization under more advantageous circumstances, and the like. In a number of cities public receptions to naturalized citizens were held in connection with the court proceedings, and at one of these in Philadelphia on May 10, presided over by the mayor of the city, the principal address was made by the President of the United States. The National Americanization Committee has been organized to further the objects of assimilation. (See also VII, *Municipal Government.*)

SOCIAL AND MENTAL HYGIENE

Alexander Johnson and Margaret Johnson Lane

General Direction of Effort.—As interpreted by those engaged in it, work for social hygiene is directed to the promotion and guidance of sex education, the establishment of the single standard of morals, and the suppression of prostitution and its associated evils, venereal disease, mental and moral degeneracy and economic waste. Work for mental hygiene is primarily concerned with provision for the insane, although other mental ills, such as feeble-mindedness, are logically included under the title. The idea that prevention is more important than cure or custodial care is taking hold among those dealing with mental diseases. Thus, people engaged in work for the feeble-minded are striving to find some means of preventing the propagation of defectives. And those interested in providing for the insane are attempting to extend their influence into the community so as to detect the earliest symptoms of mental disease, and, wherever possible, to give the treatment necessary to prevent the patient from becoming actually insane.

Social Hygiene.—Steady progress is the report of those striving to elevate the general moral tone. The type of work of a few years ago has given place to less sensational but none the less effective methods. The amalgamation of the two parallel national societies for social hygiene, reported in the last issue of the Year Book (p. 388), has resulted in a more vigorous drive at the vice problem. The new organization, the American Social Hygiene Association, reports its activities in a news bulletin and also

in a quarterly magazine, first issued in December, 1914, named *Social Hygiene*. The first president of the new society, Charles W. Eliot, was re-elected at the meeting in 1915.

A prize of $1,000 for the "best original pamphlet on social hygiene for adolescents between the ages 12 and 16" is being contested for under the arrangements of the Association. This sum was offered by the Metropolitan Life Insurance Co., which has engaged actively for several years in spreading information about the dangers of venereal diseases. The method of stimulating interest and discussion by offering prizes has been used also by the National Institution for Moral Instruction. For the best code of morals for use in schools and homes the Institution offers a prize of $5,000. The competitors are limited to 70 specially selected ones; Dr. Milton Fairchild, director of the National Institution, is managing the contest, assisted by a number of distinguished people as judges.

The American Social Hygiene Association reports the organization of two state societies of kindred purpose in the South, Virginia and Louisiana. In its exhibit at the Panama-Pacific Exposition, the Association makes the following statement:

> Seventeen vice commissions, after surveys of local conditions in 15 large cities and two states unanimously agree in recommending:
>
> 1. Continuous and consistent suppression of vice.
> 2. Abolition of segregated vice.
> 3. Placing all hotels and rooming houses under an efficient system of license and supervision.
> 4. Establishment of municipal supervision over all places of amusement.

In connection with its exhibit at the Exposition, the Association conducted frequent informal conferences with parents and others interested in the teaching of sex hygiene. These conferences were intended for small audiences of 20 or 30 people, but the interest was so great that they soon grew into a course of lectures with 200 or 300 in attendance, followed by more intimate discussions in smaller groups.

Sex Education.—In spite of the increasing interest in instructing school children in the truths about sex, the schools have not taken up the task with any enthusiasm. It is still left to individual initiative. In all the 19 pages of the programme of the National Education Association and the numerous allied educational bodies which met in Oakland in August, there are mentioned just two papers on sex hygiene. Until this subject is given a place in the curriculum and until teachers are given instruction in how to teach it, sex education will not be given generally to the school child. Each year a few more normal schools offer a course on social hygiene to their students, but the number doing so is still comparatively small.

Laws for the Suppression of Vice.—One of the most definite phases of the propaganda of the American Social Hygiene Association is that of urging adequate and comprehensive laws relating to the use of property for houses of ill fame. Some kind of injunction and abatement law now exists in 22 states, Colorado, Indiana, Michigan and Illinois having fallen into line within the year. These laws differ in the various states, but the principle which they share in common and which is new and distinctive in the history of laws aimed at the suppression of prostitution is giving to the individual citizens in many communities the right to prevent by injunction the continued operation of houses of prostitution as nuisances without having to prove that such individual citizens suffered special damages different from those suffered by them in common with the public. Heretofore the difficulty in proving special damage under the old laws has restrained many public-spirited citizens from attempts to clean up their communities.

A new law in New York State is intended to facilitate the arrest of prostitutes and to make possible the arrest of that more dangerous individual, the procurer. The law declares to be a vagrant a person "who loiters in or near any thoroughfare or public or private place for the purpose of inducing, enticing or procuring another to commit lewdness, fornication, unlawful sexual intercourse, or any other indecent act."

Those who drew up this bill hope that it will be effective in reaching the "masher," the man who annoys decent women and whom it is difficult to convict because of the unwillingness of the woman to make public admission of such annoyance. (See also VII, *Housing*, and *Police.*)

Vice Commission Surveys.—Local surveys of vice conditions have become almost too frequent for comment. Lancaster, Pa., has set an excellent example in conducting a follow-up investigation one year after its first vice study, to measure the progress since the revelations of the earlier work. The second investigation reported greatly improved conditions, especially the doing away with the red-light district, the closing of side rooms of saloons and the prosecution of a number of resort and hotel keepers.

In Chicago over 18 clubs and organizations are allied in the movement for a morally cleaner city. The Morals Commission has pointed out that by receiving large sums of money in fines from prostitutes, the city is really making a profit from vice and is, therefore, really a legalized pander. No less intelligent is the attitude of the Morals Commission toward the delinquent. It claims that "outside of vice consequent upon moral incapacity or moral imbecility, 80 per cent. of Chicago's vice is due to a lack of normal physical health of the vicious. Improper food and bad housing conditions are responsible for this large percentage of the social evil in the city." As a result of the activities of the Commission it has now become part of the duty of every policeman to observe infractions of the health ordinances and to report them to the sanitary inspectors who are now assigned to the police districts.

One of the most active organizations among the 18 which make up the Morals Commission is the Chicago Woman's City Club, which secured 19,000 signatures to a petition requesting the Mayor to close up one of the worst dives in the city. The legislative reforms advocated by the club include:

1. Abolition of the system of fining immoral women and the substitution of indeterminate sentences to a state rural vocational home.
2. A redrafting of the abandonment act so as to increase a father's responsibility for the support of his family.
3. A redrafting of the bastardy act forcing the father of an illegitimate child to care for it according to his means until it reaches the age of 18 years, and making his offense a misdemeanor so that it will be extraditable.

Venereal Diseases.—A tardy appreciation that a more practical means of ousting the quacks than mere denunciation is a cheap, accessible and honest substitute has given rise to the opening of a number of clinics for venereal diseases. The Boston Dispensary has conducted an evening clinic for venereal diseases since March, 1914. New York City has now 27 clinics, some day time and some evening, where syphilis is treated. Until very recently venereal-disease patients have been barred out of most hospitals, whether public or private. In the spring of 1915, the commissioner of health in Buffalo opened a department for venereal diseases in the Municipal Hospital. This department has branches for women and children. About 200 men have been treated by the department in the first eight months of its existence. The number of women and children is much less owing to difficulty in getting people to admit the existence of the disease. The department is well equipped with operating room and about 20 beds and a dispensary is being opened in connection with it. Even pay patients are charged less than the cost of treatment. The department is coöperating with the Charity Organization Society in order to make itself more accessible to needy patients. (See also XXVIII, *Public Health.*)

Birth Control.—For several years a few individuals in New York and elsewhere have persistently urged a change in the legal attitude toward the giving of information about contraceptives. Early in the spring of 1915 the arrest of one William Sanger for handing out a pamphlet on birth control to a young man who called at his house and begged for it aroused such a storm of indignation that two propagandist associations

on birth control were organized. These are the Birth Control League and the Committee on Birth Control. Both seek to amend the penal code of New York State which makes it unlawful for one individual to tell another about contraceptive methods. The two associations are agreed in denouncing the existence of such a law but differ in respect to the means of bringing about a change. The Birth Control League wishes the law stricken from the statute book. The Committee on Birth Control believes that greater success will attend their efforts if they urge that the law be amended so as to permit duly licensed physicians to prescribe methods of preventing conception for their patients, and shall prohibit the giving of such information to minors. In May the Committee on Birth Control held a large and dignified meeting in the New York Academy of Medicine.

Relation of Vice to Mental Defect.—Much has been said in the last few years about the relation between vice and mental defect. Groups of delinquents of one sort or another have been given psychological tests to discover the percentage among them who are of inferior mentality. The most frequently studied type is perhaps the prostitute. A great difference of opinion exists among the students of the relation between vice and feeble-mindedness. Some investigators have shown as many as 80 per cent. to be feeble-minded and others have found the defectives as few as 10 per cent. The differences are due to different interpretations of the term feeble-minded and also to the varying characters of the groups studied. Highly selected groups, such as prostitutes serving sentence or under arrest, are not typical of prostitutes as a whole.

One study of this class made within the year is especially significant because it is not assailable on the ground of being limited to a selected group. The Virginia State Board of Charities and Correction gave the Binet test for measuring intelligence to 120 persons chosen at random in the red-light district of one of the larger cities in the state, 71.6 per cent. were found to be distinctly feeble-minded, and only 28.4 per cent. normal. The most accurate and conservative studies of the mentality of prostitutes thus far made indicate that about one-half of those who come into the custody of city and state institutions are mentally defective.

Prevalence of Mental Defectiveness.—The work of several state commissions on mental defectiveness were reported in the last issue of the YEAR BOOK (p. 389). Early in 1915 two additional state commissions published their reports. Perhaps the most startling facts were brought out by the Children's Commission of New Hampshire, which published in April a comprehensive and convincing statement of its study of all the feeble-minded in the state. A vast scattering of questionnaires, supplemented by intensive canvasses in various localities and careful testing with the Binet scale of all children in the many orphanages, found one feeble-minded person in every 100 of the population of the state. One of the significant revelations made in this report is that the relative amount of feeble-mindedness increases from the smallest proportion in the most populous county in the state to the largest in the two most remote and thinly populated counties. The report points out the utter futility of the method of treating feeble-minded women whereby they are allowed to enter the county almshouses to give birth to their illegitimate babies and then are permitted to go out to repeat their sexual experiences, leaving their children to be placed in orphanages. The Commission reports 550 feeble-minded women known to be at large in the state. (See also *Child Welfare, supra.*)

The Virginia State Board of Charities has just issued a report after a five-years' study of weak-mindedness. Many startling facts are brought out in this report, among others, that the almshouses of the state are virtually lying-in hospitals for feeble-minded women, that fuly 80 per cent. of all persons in the almshouses are feeble-minded, that 68 per cent. of all children passing through the juvenile courts and found in the industrial schools are apparently feeble-minded, and that over 60 per cent. of the jail

population is made up of feeble-minded persons.

The Michigan commission did not attempt a conclusive survey of the number of feeble-minded in the state but studied one county, where it actually registered the names of 116 feeble-minded people, or one in each 224 of the population, not counting the inmates of the state institution for feeble-minded who came from that county. The commission reports both insanity and feeble-mindedness on the increase; it found the marriage laws relating to mental defectives unenforced, the sterilization law unenforced, a third of the girls and a fourth of the boys in the state reformatories feeble-minded, a fourth of the inmates of the county infirmaries feeble-minded, and concludes with a tremendous plea for adequate segregation, especially of women of child-bearing age.

The Juvenile Protective Association of Chicago after seven years of study, issued during the year a report showing 4,555 actually recorded cases of feeble-minded juveniles in the city and makes a conservative estimate of 1,500 more. The following suggestions are put forward by the Association.

1. Subnormal children in the public schools: Separate and specialized instruction for retarded children and for subnormal children. A follow-up system for the children after leaving the school rooms. Special training of teachers of subnormal children.
2. Institutional needs near Chicago: A new institution to include training school, asylum for idiots, cottages and colonies for adults, etc. Provision for the custodial care of feeble-minded women of child-bearing age. Provision for a teachable group of defective delinquents.
3. Legislative needs: Laws of commitment and discharge which will give the institutions permanent control of their inmates. Protection of feeble-minded girls and women.

One other study of feeble-mindedness reported on during the last year brought to light startling facts. The Public Charities Association of Pennsylvania undertook to discover as to whether there were areas which by common consent were regarded as centers of degeneracy and defect. A preliminary survey of the ten counties in the northeastern corner of the state revealed at least half a dozen such centers. One of these, an area of 700 sq. miles, was chosen for intensive study. Here, among the 16,000 population, the amazingly large number of 508 feeble-minded people were found, or three in every 100. Criminality, sexual vice, dependence and alcoholism were found to be prevalent among the 508. The report urges that the state should recognize its responsibility to interfere and control such a degenerate district just as readily as it would to cleanse a polluted water supply or check an outbreak of some contagious disease.

Provision for the Feeble-Minded.—A Committee on Provision for the Feeble-Minded was organized in the spring, with headquarters in Philadelphia. The Committee announced as its purpose, "to disseminate knowledge concerning the extension and menace of feeble-mindedness and initiate methods for its control and ultimate eradication from the American people." In addition to publicity and propaganda by lectures, the Committee is coöperating with several other organizations to make a complete survey of the feeble-minded in the state of Arkansas with a view to the establishment of an institution. The governor of the state has appointed a commission of five members. Four outside organizations are coöperating with the commission in making this study. These are the U. S. Public Health Service, the National Committee on Mental Hygiene, the Eugenics Record Office and the Committee on Provision for the Feeble-Minded. The inmates of all the state institutions are to be examined for mental defect and various types of communities are to be studied intensively to supplement the information gained by sending out a large number of questionnaires.

Provision for the Insane.—Although the insane are better cared for in the United States than the feeble-minded, the provision is not yet adequate for this class. Several thousand insane persons are still confined in jails and almshouses, a condition obviously unwise for the patient and unfair to the other inmates. The National Committee for Mental Hygiene continues

its activities, assisted by a recent endowment of $94,500 for five-years' work, the gift of Mrs. Elizabeth Milbank Anderson and Mrs. W. K. Vanderbilt. The services of Dr. Thomas W. Salmon as medical director are contributed by the Rockefeller Foundation. One branch of the Committee's work is the making of surveys as to conditions of the insane in various parts of the country. Such surveys have been completed in Pennsylvania, Wisconsin and South Carolina. Similar surveys are under way in Texas, Arkansas, Missouri, and Florida. Fifteen other states, situated in the far West, the Middle West, New England and the South, have been selected for the next work of the Committee. The surveys have revealed much defect in methods and practice, especially in the county institutions. The Committee is reporting the particulars of the worst conditions it finds only to those primarily concerned. Its aim is to coöperate with the state and local authorities in securing reforms, and startling reports, no matter how well founded, would arouse fatal antagonism. Hopeful results are reported, especially in South Carolina.

Another branch of the Committee's work is encouragement of the organization of state societies for mental hygiene. Eight state committees are in existence now, Alabama and Louisiana having organized in the summer of 1915, and 20 others are in process of organization. Several of these societies are especially concerned with stimulating the out-patient phase of the work for the insane, both the after-care of patients who have been discharged from hospitals and preventive work with those who are in a mentally unbalanced condition although possibly not actually insane. The Massachusetts Board of Insanity in August, 1914, asked each hospital under its supervision to consider opening an out-patient department. The Board holds the ideal that it is the duty of each hospital to reach out into the community and hold itself responsible for the mental health of the district which it covers. The response of the Massachusetts hospitals has been excellent, and now every hospital for the insane in the state has undertaken some form of out-patient work. Also nearly every large city in Massachusetts has a clinic for nervous and mental cases.

The mental-hygiene committee of the New York State Charities Aid Association has set itself the task of getting every hospital in the state to open an out-patient department within the next year. Seven hospitals at present have such departments and four of these have workers in the field. The first New York State Conference on Mental Hygiene was held in Albany in March.

CRIMINOLOGY AND PENOLOGY

PHILIP KLEIN

The Campaign of Education.—The limelight of publicity on matters of prison reform was shed unsparingly during the year 1915, most of it due undoubtedly to the appointment on Dec. 1, 1914, of Thomas Mott Osborne to the office of warden of Sing Sing Prison (see *infra*). Apart from that, the usual publicity attendant upon agitation for particular reforms in various communities was sought in the accustomed ways. The institute in problems of penology first given by Dr. Lewis of the Prison Association of New York in 1914 under auspices of the New York School of Philanthropy was again given, the participants including executives from several states and from the Federal military prisons.

Criminology.—For American contribution to the science of criminology the year 1915 has been perhaps the most important one. In January, Dr. William Healey, director of the psychopathic clinic attached to the Chicago Juvenile Court, published *The Individual Delinquent*, giving the results of five years of study of juvenile delinquents. One thousand cases of recidivists were studied, and exhaustive examination was made of all factors, individual, hereditary and social, that would bear upon the criminality of the child. The first part of the book is devoted to methodology

and conclusions, the second part to the statement of all the cases considered, arranged in type groups. The volume is undoubtedly the masterpiece of American criminology and represents both the culmination of our tendency towards the emphasis of subjectivism in crime, and the basis of future studies of its character in this country.

The gist of Dr. Healey's findings is, that the vast majority of repeated offenders are such because of definitely psychological causative factors. These may be "mental abnormalities and peculiarities" (including defects), "mental conflicts," "unsatisfied interests," etc. While he denies absolutely the inheritability of criminality as such, he considers a large proportion of the causative factors inherited. Comparatively little importance is given to the direct causal efficiency of environment and still less to deficient educational opportunities. The mental abnormalities and peculiarities are carefully differentiated as defective, aberrational and peculiar types, with further subdivisions under each head. The practical lesson emphasized is the necessity of individual study and understanding of the psychic factors of the offender.

A second specialized criminological study of pathological lying, accusation and swindling, based on 27 cases similarly studied, was published by Dr. Healey with Mary T. Healey. The methodology established in the first publication is strictly carried out. Along very similar lines case studies of three criminal imbeciles were published by Dr. Goddard. The latter is particularly important because it presents the first cases where the Binet-Simon test was admitted as evidence in court to prove imbecility as a cause for the plea of not guilty. Other contributions of cumulative and critical nature, concerned mostly with mental defects of the offender, have appeared more or less regularly, most of them in the *Journal of the American Institute of Criminal Law and Criminology*. The consistent increase in the number of institutional and court psychologists steadily increases the amount of contributions of this nature.

Facts of an entirely different nature are presented by Chas. E. Merriam in the findings of the Chicago Council committee on crime. These findings were based upon an inquiry into crime rather than into the nature of criminals. It is shown that minor crimes in Chicago are vastly more numerous than felonies, some 93 per cent. of the total. Less than half of the remaining seven per cent. are actually convicted, and not all of these are sent to prison. This seems to indicate the importance of distinguishing between criminals (like Dr. Healey's recidivists) and offenders against the law. Very interesting are the figures showing that immigrants in Chicago are less, rather than more, in conflict with criminal laws than native Americans. In the recommendations of the committee equal importance is given to improvement of laws and of the administration of justice, to the necessity of expert (psychological) inquiry into the nature of the offenders, and to the provision of proper institutional facilities for their treatment.

Lynchings.—According to figures of the *Chicago Tribune*, the number of lynchings during the year 1915 up to Dec. 15 was 96. Details are as yet unavailable as to the color, sex and offences of the lynched persons. Perhaps the most important single lynching of the year was that of Leo Frank, convicted of murder in Georgia and committed to the State Farm, upon commutation of sentence by the governor. He was kidnapped from the prison by a band of well connected citizens, of admittedly high public esteem. The perpetrators of the lynching were not found. Frank's lynching is important, not so much because of the amount of publicity it involved, but because of the extreme example of mob psychology, sustained through a long period, working without the necessary accompaniment of an assemblage of many persons and based upon the relentless conviction that when the law did not satisfy the public, it was at fault, and the public could take the law into its own hands.

Administration and Management of Prisons.—There is one great group of penal institutions that have consistently failed to benefit much from the general reform movement; these are

the county jails. An exhaustive inquiry by Mr. Votaw of the Pennsylvania Prison Society into the county jails of that state, the results of the personal inspection of all county jails of Louisiana by the state health officer (published in 1915), the continued agitation of the subject in New York State by the Prison Association, by Dr. Oates in Alabama, and elsewhere, show the difficulty of dealing with this type of institution. The tendency, embodied in definite recommendations and legislative bills (*e. g.*, Pennsylvania and New York), is towards the abolition of the function of the county jail as a prison for convicted persons, and the substitution of central state workhouses.

Many administrative details in penal institutions are being generally introduced, or at least experimented with, for example, the separate receiving and quarantine department, sterilization of shaving material, the use of Wassermann tests, and the use of hanging hammocks instead of cots. The practice of segregating the diseased from the well at meals, work and lodging has made progress, as reported from many institutions.

Amelioration of Prison Conditions: Honor System; Self-Government.—That the new way of dealing with men and women detained in penal institutions is coming into its own is evidenced by so long a list of institutions or states that have fallen into line that it is possible to describe here only the most important of recent examples. In the Iowa State Penitentiary, for instance, some 200 out of less than 700 prisoners work "on their honor" in road camps and on farms, all wearing citizens' clothes and under supervision of a few unarmed guards. The introduction of self-government is the next step to be attempted. Warden Sanders is so thoroughly convinced of the value of having "convicts live as nearly as possible a normal life," that he even believes in the advisability of allowing long-term men to have their families with them and live on plots of ground furnished by the state. In the South Dakota penitentiary some 40 per cent. of the prisoners work outside the prison walls. Talking at meals and at Sunday afternoon social hours is allowed and weekly moving-picture shows are given. The New Jersey State Home for Girls has an honor cottage run by self-government, as have many other similar institutions, for example, the Alabama State Training School for Girls and the Bedford Reformatory in New York. Great success is reported from honor camps on road work in Texas. Self-government has been introduced in the Ohio State Penitentiary. A summary of improvements in the Federal prison in Atlanta during the last three years includes the following: abolition of stripes, designation of prisoner by name instead of number, two half-holidays per week for games and recreation in the open, abolition of silent system at work and at meals, full orchestra with professional director, letter writing once a week, increase in tobacco purchase allowance, use of safety razors, use of lights till 10 p. m., better food, motion pictures, sanitary barber shop, games with outside baseball teams.

In the largest penal system comprised under one administrative authority, the Department of Correction of New York City, stripes are now worn by a very small percentage of the prisoners. Letter writing and visiting privileges have been doubled, medical service has been materially improved. In one of the institutions of the Department, the chief officer was removed, after a hearing, for cruelty to the inmates. In another, the penitentiary (an institution built in 1832, unsanitary and inadequate), where old-school methods had prevailed under one of the ablest and most reactionary exponents of that regime, the warden's absence on leave was effected; with the incoming of the new executive, outdoor recreation was begun, followed by improvement in sanitary conditions and gradual development of self-government.

The greatest and most talked-of reform of the year has been that at the Sing Sing State Prison at Ossining, N. Y., one of the most famous American prisons. Immediately upon his appointment on Dec. 1, 1914, Warden Thomas Mott Osborne introduced the self-government plan as the administrative machinery of the pris-

on proper. He had experimented with the system first at the Auburn State Prison, where he had undergone a week's voluntary imprisonment to study conditions. The two definite conclusions he reached were, first, that the condition of prisoners in regard to physical conditions was wretched and in regard to spiritual environment and mode of life abnormal, and second, that the system of self-government developed at the George Junior Republic is applicable to any state prison. The inmate organization, the Mutual Welfare League, was the immediate result of Mr. Osborne's self-imposed incarceration at Auburn (*A. Y. B.*, 1914, p. 398). A similar organization at Sing Sing was inspired by this, and was fairly under way under Mr. Osborne's predecessor. The chief features of this regime are the following:

(1) All matters of discipline and internal organization are in the hands of an inmate body composed of some 50 delegates elected by the prisoners on the basis of shops or work gangs.

(2) The delegates thus chosen supervise marching over the grounds, the mess hall, athletic activities, recreation in general, moving-picture shows, lectures and plays. Committees of the delegates take entire charge of lecture and amusement programmes.

(3) All disciplinary infractions are dealt with by a board of five judges chosen by the executive committee of the board of delegates. The judges meet daily after work hours. The delegates and sergeants-at-arms are the enforcing officers, each delegate being responsible for the good order of his shop or work gang. Appeals from the decision of the inmate judges may be taken to the warden. Decisions of the judges are carried out by the administration.

(4) There are no keepers in the shops, only industrial instructors or foremen to conduct the work.

(5) Prisoners are allowed out-door recreation daily from 4 to 5 p. m., and on Saturday afternoons, Sundays and holidays. To reduce the time spent by inmates in their cells to the minimum, lectures or entertainments are held in the chapel practically every evening.

(6) A commissary is conducted by the convict organization, and prisoners are allowed to purchase a great variety of objects of personal comfort.

(7) Games are played with outside teams on the prison grounds.

(8) An employment bureau conducted by the league has been organized for the purpose of placing prisoners after release.

(9) Token currency has been introduced for the purpose of organizing labor and maintenance on a normal monetary basis.

An enormous amount of publicity was given to Mr. Osborne's experiment, which is but a year old. Opinion has been sharply divided. The New York State Superintendent of Prisons, who has general authority over Sing Sing, disapproved of a number of Mr. Osborne's methods, and the controversy gave rise to much newspaper agitation, for the removal of Mr. Osborne on the one hand and for his support on the other. Early in November the grand jury of Westchester County began an investigation of Sing Sing, and on Dec. 28 returned two indictments against Mr. Osborne, one for perjury and the other for mismanagement on six different counts of official and personal misconduct. At his own request Mr. Osborne was granted on Dec. 31 leave of absence pending trial of the indictments, and Prof. George W. Kirchwey, of Columbia University, was appointed warden in his stead.

It is too soon as yet to judge of the final value of this self-government plan. Undoubtedly it has the right foundations. The chief objections have been that the much too precipitous introduction of the system has thrown the prisoners off their balance, has allowed possibilities of idleness, internal nepotism and immorality, and may, by the suddenness of its revolutionary changes, endanger the permanent beneficial possibilities of self-government in prisons within natural limits.

Two well known penologists, Dr. H. H. Hart and Jas. A. Leonard, were asked during the year to investigate and report upon the needs of the Philadelphia House of Correction to bring it into line with modern standards. The chief recommendations were for the introduction of the indeterminate sentence and parole; payment of wages to men committed for non-support (there is statutory provision for this, but no appropriation); feeding prisoners in dining-rooms instead of in their cells; furnishing cells with toilet, running water and electric light; better segregation of men from women; more intensive classification; employment for women as well as for men. The pe-

culiar significance of this investigation is that it was asked for by the responsible authorities as a matter of positive constructive effort, and not as a result of scandal or attempt at political dislodgment.

Prison Architecture.—The direction of progress in the architectural aspect of prison reform is towards two standards particularly, one, the use of outside cells, that is, cells built against the outside walls of the buildings with a window for each cell, the other, the erection of groups of buildings for the separate housing of different classes of prisoners. The building of huge inside-cell blocks, while not yet a thing of the past, is gradually being given up. During 1915, plans were prepared by Alfred Hopkins of New York and accepted for a county penitentiary in Westchester County, New York, embodying the above principles. All cells face the outside. There are four cell buildings, each containing 100 cells. The cell buildings, shops and other buildings are so distributed as to constitute, together with some walls, a complete enclosure including two large athletic fields. Another important architectural development is the "reception building." The best model so far is the one in the Bedford Reformatory, while modifications are being made to fit the problems of individual institutions. The idea is to have in one building facilities for receiving, bathing, barbering, dressing prisoners, giving them physical and mental examination, and retaining them in quarantine for a minimum of 14 days; if examination into his or her antecedents is to be made the prisoner is retained in this reception department as long as necessary. The fact that all offices and records are kept in the same house constitutes it a complete unit for scientific penological and criminological methods.

Penal Legislation.—For Pennsylvania 1915 was a banner year in penal legislation. One act (No. 289) provides that all prisoners in both the eastern and the western penitentiaries and in the reformatory (instead of a specifically distributed 35 per cent. as heretofore) may be employed on a state-use system and on road construction. A Prison Labor Commission is established, with power to regulate prison labor and to distribute its products; a capital fund of $75,000, a most important essential, and executive expenses are allowed. Convicts may be paid from 10 to 50 cents per day for labor performed. Three-fourths of these earnings, or more at the prisoner's option, constitutes a fund for the dependents of the prisoner; if no such dependents exist, he may expend part in prison, part on his release, and the remainder six months after release. The use of power machinery is allowed. Mandatory employment of prisoners and of the disposition of prison goods, however, is not provided for; this is a great weakness. Further legislation permits the employment of jail prisoners on highways, forbids the use of striped clothing for prisoners thus employed, and provides a 25-cent per diem remuneration. Persons awaiting trial may avail themselves of this opportunity if they so desire. The eastern and western penitentiaries are to be combined as soon as practicable on the new 5,000-acre farm purchased for the new prison.

In North Dakota compensation for prisoners' labor has been allowed by the 1915 legislature. From 10 to 25 cents per day are to be granted, one-half to three-quarters of which is to go to dependent relatives of the prisoner. Illinois raised the age limits for its reformatory from ten to 16 years as the minimum and from 21 to 26 years as the maximum. New York State amended its statutes extending the possibilities of employing prisoners. For New York City the state passed an indeterminate-sentence law of the greatest importance (see *infra*). In Ohio attempts were made to repeal the indeterminate-sentence law, to abandon the project of building a new farm penitentiary, and to abolish the compensation for prisoners' labor, but fortunately all these attempts failed. In Kansas a bill providing for a new penitentiary, in accordance with the recommendations following the searching investigations by Professor Blackmar, was defeated, but permissive legislation was passed allowing cities of the first class to establish

prison farms. The West Virginia legislature established juvenile courts and probation for certain minor offenses. Rhode Island established juvenile courts and a state Board of Parole, and introduced the suspended sentence and payment of fine as a substitute for certain jail sentences.

Prison Labor.—The paramount importance of the labor aspect of the prison question warrants repetition of the guiding principles regarding prison labor, briefly stated in the last issue of the YEAR BOOK (p. 396) as follows: first, there must be work; second, it should be reformative, healthful, efficient, preferably outdoor; third, it must not be contract labor; and fourth, it must not seriously conflict with free labor. The legislation affecting prison labor in Pennsylvania (see *supra*) should be appreciated in the light of these principles. The use of prisoners in road building, construction work, farming and similar occupation is becoming so rapidly accepted as the regular thing that it is difficult to obtain information upon actual new undertakings along those lines. It is most significant that in many states, for example, New York, Pennsylvania, Montana and Colorado, the good-roads problem is gradually being merged, or at least coupled, with the prison-labor problem, and the tendency is to deal with both as naturally interrelated matters. Reports of considerable convict road work are coming from Montana, of farm and construction work from Indiana, of road work with a 50-cents per diem allowance from the state reformatory in Connecticut; of outdoor work of all kinds from New York City, Buffalo, West Virginia and Ohio. The California legislature of 1915 allowed the use of unskilled convict labor on the roads. The Nebraska legislature abolished contract labor in the state prison and substituted "instructive labor, not competing with free labor," particularly on construction and road work; in addition, the jails must provide labor for their inmates, if necessary by hiring them to private persons. On the other hand, something of a setback is the report that contract labor has been extended in Missouri for 21 months more, and that the Connecticut special commission on contract labor has not been able to agree on the advisability of abolishing it. The commissioners do agree on the undesirability of county jails and the advantages of the indeterminate sentence.

Indeterminate Sentence, Probation, and Parole.—There is scarcely a difference of opinion now as to the value of probation instead of imprisonment, of the indefinite sentence, of conditional release, and of parole supervision. State boards, cities, individual courts and judges make reports, generally annually, of accomplishments with probation; and institution reports are coming more and more to have among their items a steady feature of "parole report."

Some very remarkable facts were brought out in a paper read before the American Prison Association meeting in Oakland, Cal., by Amos W. Butler, presenting a study of the workings of the indeterminate sentence law in Indiana during the 18 years since its introduction in that state. The following figures give the totals for the three state institutions (the reformatory at Jeffersonville, the state prison at Michigan City, and the women's prison at Indianapolis) during the period April 1, 1897, to April 1, 1915:

Served parole and given final discharge	5,422
Sentence expired during parole period	459
Returned for violation of parole	1,398
Delinquent and at large	983
Died	154
Reporting April 1, 1915	618
Total paroled	9,034
Percentage of unsatisfactory cases	26.3
Earnings of paroled prisoners	$2,530,199.40
Expenses	2,075,783.15
Savings	$454,416.25
Average savings	$50.30

The percentages of failure for the three institutions were 25.7 for the reformatory, 27.2 for the state prison, and 28.6 for the women's prison. But the most striking facts are other than those found in these figures. The number of commitments for felony decreased from an annual average of 754 during a ten-year period preceding the law to an average of

663 for the ten years following, a reduction of 12 per cent. The average term served by those committed has considerably increased rather than decreased.

One of the most important things yet done in the field of scientific penology is the passage of a law providing a general indeterminate sentence and parole for the penitentiary, workhouse and reformatory for misdemeanants in New York City. The law, expected to become active on Jan. 1, 1916, will affect, it is calculated, 10,000 persons admitted and the same number of persons discharged annually. The maximum sentence at the penitentiary and reformatory is three years, at the workhouse two years. A parole commission of five members, composed of the commissioner of correction and the police commissioner *ex officio* and three appointed salaried members who are to give their full time to the work, is to have absolute jurisdiction over the period of detention within the maximum, and over the conditions of release and recapture.

Capital Punishment. — Legislation for the abolition of the death penalty has had some, but not consistent, success during the year. In Oregon the death penalty was abolished by an amendment to the constitution adopted in November, 1914. In North Dakota it was abolished in 1915 except in case of convicts serving sentence for murder. In Connecticut, Utah, Arizona and New York it was retained despite much agitation.

New Institutions.—In Indiana a state farm for misdemeanants has been opened. This institution, as a type, is important, not only as indicating a further step towards the general adoption of the "prison-farm" principle, but also, and perhaps chiefly, because it means the passing of the county jail for convicted persons. Iowa has begun a similar move by the purchase of an 800-acre farm to be used for a prison for misdemeanants. Westchester County, New York, is building a county penitentiary on a farm, carrying out modern ideas in administration, farm occupation and the abandonment of the county-jail system for convicts. The Tennessee legislature has granted appropriations for the building of a women's reformatory.

Personal and Miscellaneous.—The continuation, despite much agitation, of the wardenship of Thomas Mott Osborne at Sing Sing (see *supra*) is one of the most significant items of the year's record. Charles H. Johnson, formerly superintendent of a famous orphan asylum, and consequently a valuable assistant to Mr. Osborne as deputy warden, has resigned his position as assistant warden at Sing Sing to accept the superintendency of the Connecticut State Reformatory at Cheshire. Col. C. B. Adams, formerly superintendent of the State School for Boys at St. Charles, Ill., was appointed superintendent of the Massachusetts State Reformatory at Concord. Dr. Charles F. Stokes, Surgeon-General of the U. S. Navy, has become director of the New York City Inebriate Farm. Ernest F. Coulter, founder of the Big Brother Movement, has accepted the superintendency of the New York Society for the Prevention of Cruelty to Children. Cole J. Blease, the "pardoning Governor" of South Carolina, resigned a few days before the expiration of his term in January. William H. Mayer, warden of the Federal prison at Atlanta, resigned and was succeeded by Frederick Zerbst. The cause of prison reform suffered an irreparable loss during the year in the death of Prof. Charles R. Henderson of Chicago.

A few other events of the year merit passing mention. The American Prison Association met at Oakland, Cal., during the week of Oct. 11. The International Prison Congress, which was to have been held in the summer of 1915 in London, has been indefinitely postponed on account of the European War. Prison exhibits for the Panama-Pacific Exposition were prepared with great care by the penal authorities in many states. A junior police force of street urchins has been organized by Captain Sweeney, of the New York City police force, as an experiment in education and prevention of juvenile crime (see also VII, *Municipal Government*). The Big Brother Movement has had a year of great development and has definitely established

its great usefulness. The movement for the introduction of the public defender has progressed in California, where permissive legislation has extended it during the year; the idea is rapidly gaining adherents.

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THE LIQUOR PROBLEM

John Koren

Production and Taxation. — The quantity of distilled spirits other than from fruits withdrawn for consumption during the fiscal year ending June 30, 1915, was 121,639,124 gals. This is equivalent to a decrease of 14,794,625 gals. as compared with the fiscal year ending June 30, 1914. The production of fermented liquors shows a decrease of 6,358,744 bbl. for the fiscal year of 1915, the total production being 59,746,701 bbl. Of spirits from fruits, etc., 2,516,054 gals. were withdrawn for consumption, a decrease of 188,498 gals. as compared with the fiscal year ending June 30, 1914. The total collections of internal-revenue tax on spirits of all kinds were for the fiscal year $144,619,699; the corresponding taxes on fermented liquors yielded collections of $79,328,946. The extra tax on beer at 50 cents per barrel imposed to meet the falling off of revenue caused by the European War was renewed for a year in December.

The decrease in the amount of spirits withdrawn for consumption as well as in the production of malt liquors is undoubtedly in part attributable to prohibition efforts, both state and local. At the same time the general conditions of business and industry have contributed to it very largely. One need only mention that immigration has fallen off about 70 per cent.; that a large number of wage earners have returned to Europe; that the building trades have been stagnant and little construction work of any magnitude has been carried on; and that the import trade has almost ceased. Undoubtedly the addition of many new prohibition states will materially affect the production, especially of the fermented liquors, after Jan. 1, 1916, as at that time several of the new laws will go into operation.

Prohibition Movement.—During the year two states have been added to the prohibition column, namely, Iowa

and South Carolina. South Carolina, after long experimentation with the dispensary system, which had been abolished as a state venture but still was applicable in counties, really had to choose between that system and state-wide prohibition, since previous legislation practically made the return to license impossible. Iowa is about to begin its second experiment with prohibition. The first, which was of several years' duration, was nullified by the so-called mulct law, although the prohibition law remained on the statute books. In some of the other states which voted prohibition in 1914, or even earlier, the dry regime is to be inaugurated on Jan. 1, 1916. This is true of Virginia, Washington, Oregon, etc. In the November election of 1915 prohibition was an issue in but one state, namely, Ohio, where it was defeated by 70,000 majority. The Kentucky contest was virtually settled adversely to prohibition at the primaries, notwithstanding the fact that nearly all the counties were supposedly made "dry" through local option. Undoubtedly the attempt to force a national prohibition amendment (*A. Y. B.*, 1914, p. 46) through Congress will be renewed.

Local Option.—The most notable local-option contest involved the attempt to lay dry Hennepin County, Minnesota, which includes the city of Minneapolis; it resulted in a defeat for prohibition by about 10,000 votes. In other parts of Minnesota local prohibition has made considerable strides. This is also true of Michigan and to some extent of Illinois.

Prohibition and Taxation.—The loss of revenue from liquor licenses and the large cost of enforcing prohibition appear to have caused financial embarrassment in a number of states. Thus in Tennessee, West Virginia, Georgia, Alabama, and probably in some other states, the authorities are facing serious deficits. Indeed, the condition in certain places has become notorious, especially in Tennessee. Locally certain cities have got into a curious predicament through the loss of the liquor revenue and other incomes incidental to it. Thus, the city of Birmingham in September found it necessary to discontinue some of the most ordinary functions of the municipal government, to discharge important officials, cut the school session from nine to seven months and reduce teachers' salaries, and to dismiss one-third of its police force. Even appropriations to hospitals and other charities ceased. In other municipalities conditions under prohibition are similar. Of course this does not necessarily mean a continuation of the inability to meet obligations, but affords an illustration of the extent to which cities have depended upon the income from liquor licenses and the unquestionable disturbance of business by the sudden abolition of liquor selling and other occupations more or less dependent upon it.

VOCATIONAL EDUCATION AND GUIDANCE

ARTHUR D. DEAN

National Movements.—As an outcome of a year of carefully planned work, friends of the Federal Vocational Education bill will present a united front in Congress for its passage during the session of 1915-16. It is expected that national aid will serve as a tremendous stimulus to state aid in the several states, and state aid in turn will bring about activity in the smaller geographical units. (See also XXXII, *Education.*)

During the year more than ever has been accomplished in crystallizing the main issues of vocational education. They may be said to cover now the following seven propositions: (1) a unified system of school administration; (2) national and state aid in order (*a*) to equalize educational opportunity and (*b*) to stimulate experimentation in the field of vocational education; (3) departmental instruction and promotion by subjects in all grades above the sixth, whether the organization of the seventh and eighth grades take the form of an intermediate school, a junior high school, or remain as the upper two grades of the elementary school; (4) making some of the high-school courses in towns and the smaller

cities more definitely vocational by offering technical and manual-art courses in direct preparation for earning a living as well as in the interests of a broader culture; (5) the establishment of vocational schools or departments of existing schools to meet the needs of the larger cities and sections of states, to be supported in part by the city or section and in part by the state; (6) the development of schemes of industrial education which proceed from accurate and detailed knowledge of the conditions in the industries and occupations concerned, to which end further analysis of the processes and organization of specific industries should be encouraged; (7) more time given in grammar and high schools to instruction in the manual arts, and especially in the case of certain classes or individuals.

A new office of specialist in industrial education in the Bureau of Education at Washington has been created; it is very likely the Bureau of Education will soon become the national center in the administration of a large national fund for vocational education.

The Art Alliance of America, with headquarters in New York City, has been organized as a clearing house for art products through the bringing together of artists, manufacturers, teachers and students. The Vocational Education Association of the Middle West has been organized with headquarters in Chicago. This organization has been established in the belief that the Middle West offers a different educational problem and hence requires a different solution than the eastern section country which has a large representation in the National Society for the Promotion of Industrial Education.

State Movements. — Pennsylvania has passed a most comprehensive law providing for the health, safety and welfare of minors. Among other features it prohibits the employment of minors between 14 and 16 years of age unless they attend school the equivalent of not less than eight hours a week. In order to make it possible for the school districts to carry out the provisions of this law, there has been organized during the summer five centers for summer instruction for prospective continuation school teachers. Efforts to secure vocational education legislation in Illinois failed. The discussion of this subject was bitter, in that the advocates of the dual system were strenuously opposed by those representing and advocating the unit system of administration.

Local Movements.—The Gary, Ind., plan of work, play, study has been introduced in New York City on a large scale. Minneapolis conducted an industrial survey. This survey has the closest coöperation of the school board, Dunwoody Institute, Minneapolis Art Institute, and other civic and commercial bodies. Through it Minneapolis proposes to secure facts that will enable it to put into successful operation a comprehensive and efficient scheme of industrial education. Cleveland and New Orleans are studying their school systems and industries with a view to determining the best way of providing facilities for meeting educational opportunities in some at least of the most common life activities.

Training Teachers.—The movement for training teachers for vocational schools has become almost nation-wide in its activities. Indiana State University, through its new department of industrial education, offers a summer course for men and women who wish to become teachers of vocational instruction. The University of Minneapolis has undertaken the preparation of teachers of rural schools and instructors of manual arts. The University of Wisconsin has added four courses in manual arts and vocational education to its correspondence study department. A school has been established in Milwaukee as a branch of the University to solve the problem of training mechanics to become successful vocational teachers. The Women's Education and Industrial Union of Boston now offers a course for vocational counsellors, its purpose being to provide knowledge of industry, of methods of industrial investigations and use of statistics which form the proper foundation for vocational guidance. The Public Education Association of Philadelphia has united educators and

business men in an effort to bring about a close relationship between schools and industry through an Industrial and Technical Education Conference.

Other Significant Movements.—Organization of coöperative and continuation classes on a large scale continues in New York City. The development of junior high schools, intermediate industrial schools and differentiated courses at the end of the sixth grade is progressing rapidly in many of the western states, and to some extent the movement has developed in the east. Organized labor at San Francisco, Chicago and New York City has declared that vocational education in order to be effective shall fit the pupils for that branch of trade in which there is the greatest demand for labor. Employers' organizations are very generally supporting reorganization of apprenticeship training and stating that training for an industry shall be carried on in industry and that they should look to public schools for aid in instruction of apprentices on the academic side of their work. Trade agreements between the schools and industries have become quite general, notably in Minneapolis, Rochester, Buffalo and Chicago. These agreements affect the status of the boy as an apprentice to his trade after leaving the public vocational school and his progress toward independence as a journeyman workman.

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COÖPERATION

James Ford

Progress of the Movement.—There are two distinct coöperative movements in America, the first of farmers who organize primarily as producers, seldom as consumers, and the second of city men, chiefly artizans, who organize primarily as consumers, seldom as producers. The growth of coöperation among farmers during the past decade has been continuous and substantial. Coöperative enterprises are now fostered by state and national departments of agriculture and by agricultural colleges. Coöper-

ation among the urban working-classes has received no public support of consequence. The agricultural movement now includes (see also XVII, *Agriculture*) several thousand coöperative creamery associations and coöperative grain-elevator associations, and many hundreds of fruit and vegetable distributors associations, cheese and canning factories and supply associations. The working-class movement includes altogether less than a thousand truly coöperative associations—either for purposes of production or for distribution. The local agricultural movements, under guidance of the state and national departments, have become increasingly coördinated. The working class movement remain relatively disorganized and ineffectual.

The progress of coöperation among the working-classes during the year 1915 has been very slight, if indeed there can be said to have been any progress at all. The year marks the discontinuance of two of the older and better known journals of coöperation, the *Pacific Coöperator*, successor to the *Coöperative Journal*, published in San Francisco, and *Coöperation*, published by the Right Relationship League in Minnesota. The federated coöperative societies which had sustained these two papers, though showing no serious decline in volume of business, give evidence in the lapse of these very journals of a decline in spirit.

Coöperation of Consumers. — The Iowa Coöperative Store Federation, founded at Sioux City in 1914, was established by 35 coöperative stores of that state. It has been found difficult, however, to get the managers of the stores together for common purposes. Many of the local stores are suffering from the disloyalty of their members. This third movement is not yet, therefore, definitely established.

In the eastern states there has apparently been less relative decline in coöperative organization. The *Cooperative Consumer*, organ of the Consumers' Coöperative Union, records the establishment during the year of an embryonic wholesale society which purchases goods for nine societies in the middle Atlantic states (out of a possible 24) and charges three per cent. commission on such purchases. Federation for educational and propaganda purposes has not, however, proceeded far as yet with this group of stores. The Wholesale Coöperative Corporation of New York City, organized by public spirited citizens to promote a coöperative movement and to serve as purchasing agent, was dissolved in 1915 for lack of the support of the local stores.

The National Housewives' League of the middle states reports that many local branches have been buying supplies coöperatively, but always through purchasing clubs. The goods purchased have been mainly commodities "in the purchasing of which through ordinary channels there has been some cause for dissatisfaction." The housewives have organized to purchase fresh eggs as a protest against mislabelled cold-storage goods, have organized to purchase farm produce fresh from the farm, avoiding intermediate handling, or have purchased canned goods from the producer because in the general market they have found it "impossible for the consumer to know whose goods he is buying and whether they are put up under sanitary conditions or not."

Organized Labor and Coöperation.— Coöperative movements have not been directly fostered in 1915 either by the Socialist party or the American Federation of Labor. In 1912 a special sub-committee on the coöperative movement reported to the national convention of the Socialist party stating the value of this movement. The convention elected a committee of five persons to make further study of the movement and "to make a special effort to ascertain what bearing the degree of industrial development and organization in any particular locality has upon the operation of cooperation in that locality; to make tentative reports from time to time through the national office and the party press; and to make a final report at the next national convention" (spring of 1916).

The greatest vitality of the coöperative movement among working classes in America during the year has been shown by the associations

founded by members of the United Mine Workers of Illinois, and the Illinois State Federation of Labor. The president of the latter body served as president of the First Convention of the Local Coöperative Stores of Illinois. Altogether 23 stores established by miners and four outside of mining communities are working together. Seven of these stores have incorporated the Central Illinois Coöperative Society for collective purchasing. These organizations were largely responsible for the passage of a special statute permitting the incorporation of coöperative societies. Model by-laws and a pamphlet of suggestions to persons or groups desiring to incorporate under the provisions of the coöperative act have been published by the mine workers.

Aside from the groups of local cooperative societies mentioned, coöperation of workingmen in America is scattered and unorganized. There are probably many hundred local associations throughout the country that are not affiliated with the above groups, each association eking out its existence unaided either by the state or by neighboring societies. Many of these associations are prosperous because of the personality of the leaders. Others succeed because of the experience in coöperative methods gained by their members in coöperative associations in Europe, for a considerable fraction of these societies have been established by immigrants. Disinterested leadership, study and publication of coöperative methods, federation of local associations and favorable legislation are essential to success. These as yet are unavailable.

Legislation.—During the year new and improved coöperative laws have been passed in Illinois, Iowa and Michigan. In Montana and North Dakota the coöperative laws have been spoiled by amendments. For example, in North Dakota the fee for incorporation has been raised from $10 to $30, making incorporation more difficult for poor men, and the number of signers of the articles of incorporation has been raised from three to 25 persons, making it difficult for a small group to establish a coöperative society.

Coöperation in Canada.—In Canada the Coöperative Union, which was established in March, 1909, continues to publish its journal, the *Canadian Cooperator*. In September, 1915, there were 23 distributive societies affiliated with this Union. A third cooperative congress was held during the year, at which only societies of Quebec and Ontario were represented; the European War is held responsible for this small attendance. Statistics for 14 of these societies published in 1915 show a total of 5,810 members, share capital of $112,000, loan capital of $55,000, reserve funds of $36,000. Stocks valued at $182,000, and other assets valued at $129,000. The total sales of these 14 societies for the preceding fiscal year was $1,133,000. Net profits amounted to $73,000. All the societies paid from five to seven per cent. interest on shares and all but four returned dividends on purchases ranging from two per cent. in three cases to 12 and 13 per cent. (one case of each). Similar statistics for societies doing business within the United States are not available.

SOCIALISM

Carl D. Thompson

The International Socialist Movement.—The year has been one of trial and tragedy for the international socialist movement. The European War has been the one overshadowing concern of the entire movement throughout the year. Aside from the calamity of having the various sections of the movement drawn into the conflict and thrown against each other in mortal combat, is the fact of the loss of unknown numbers of socialists who have died in battle. Among these are not a few noted and prominent leaders, such as Ludwig Frank, a prominent member of the German Reichstag. The movement has also sustained serious losses in other ways. Jean Jaures, one of the greatest socialist leaders in Europe, was assassinated in Paris just before the war broke out. Since then

the movement in England has lost J. Keir Hardie, one of the founders and, until his death in September, a prominent leader of the Independent Labor party.

Several efforts have been made during the year to convene the International Socialist Congress with a view to devising some means of stopping the war. The first was made by the Socialist party of America. In September, 1914, the national executive committee of the party cabled to the leading socialists in Great Britain, France, Germany, Austria, Switzerland, Denmark and Sweden urging that an effort be made to get the warring nations to accept mediation by the United States. In October a conference of delegates from the three Scandinavian countries met and the matter of calling an international conference and of removing the International Socialist Bureau from Brussels was discussed. At the same time another conference was held in Italy, attended by French and Swiss socialists, and it became apparent that there was little prospect of success for an international conference, unless limited strictly to representatives of neutral nations. Accordingly, the Socialist parties of Sweden, Denmark, Norway and Holland called for an international conference of the socialists of neutral nations to be held in Copenhagen on Jan. 18 and 19. In the course of the arrangements for this conference it was found that, for one reason or another, several of the neutral countries were not to be represented, and for that reason Morris Hilquit, who had been delegated to represent the United States, decided at the last moment that it was not expedient for the American party to participate. The conference, therefore, was attended only by the 16 delegates of the three Scandinavian countries and Holland. It therefore failed as a conference even of the neutral nations, much less of the entire International.

The next attempt to convene an international conference was made by the representatives of the socialist organizations of the Allied countries. This conference was held in London on Feb. 14th under the auspices of the British section of the International Socialist Bureau and was attended by representatives from Great Britain, Belgium, France and Russia. This conference was fairly representative of the socialists of the Allied countries and was strongly pro-Allies in its sentiment. However, there were dissentient elements even there.

It would appear, therefore, that all efforts to convene the International Socialist Congress have so far failed and the results of the conferences that have been held are in no sense representative of present international socialist movement. Meanwhile the headquarters of the International has been removed from Brussels to Amsterdam, Holland.

Germany. — The German Social Democratic Party now has over 4,250,000 votes and 113 out of 397 members of the Reichstag. The majority of the party still continues to support the Government and its war policy. However, there has been a steadily growing minority standing out against the Government and protesting against the war. At the outbreak of the war it was generally understood that the socialist representatives in the Reichstag voted unanimously for the war credits. The socialist world was thunderstruck at the action. It has since developed that there was a most vigorous protest on the part of a considerable minority even at that time. This minority opposition to the war policy has steadily grown. On Dec. 2, 1914, when the second war loan was voted, Karl Liebknecht broke with the party rules and discipline which demands a unit vote, and voted "No." Fourteen other socialist members left the session in protest against the loans. On March 20, 1915, the third war loan was voted. By that time the socialist opposition in the Reichstag had grown to 30 and not only Liebknecht but also Ruehle voted against it. Among those who opposed the third war loan were Haase, Bernstein and other prominent socialist leaders. Besides this growing minority opposition to the war in the Reichstag, other forces have steadily opposed the war policy. The *Vorwaerts*, the official organ of the party, has steadily opposed a war of con-

quest and supported Liebknecht. In the Prussian Diet the ten socialist votes were cast against the loan. Thus, while the majority of the German socialist party steadily supports the Government, a growing minority opposes the war.

Austria.—The socialists in Austria have 88 out of 516 members of the Reichsrath and 1,081,000 votes. The party opposed the war with Serbia, renouncing all responsibility for it and denounced the Government for bringing it on. After the general war broke out, however, the party supported the Government and justified all the other socialist organizations in doing the same.

Russia.—The socialists have 14 and the Labor group 11 representatives in the Russian Duma. Exact figures as to the vote are not available. Here the opposition to the war on the part of the socialists has been decided and vigorous. The 14 Social Democrats in the Duma refused to vote for the war loans and left the session. They were followed by members of the Labor party. Five of the Social Democratic members of the Duma who voted against the war loans were subsequently arrested and sent for life to Siberia.

Great Britain.—The socialists have only seven members in the British Parliament, but the Labor party has 40. The British Socialist party has one representative and the Independent Labor party has six. The British Socialist party and the Labor party have taken much the same attitude of supporting the Government in England that the German socialists have taken in Germany. All the above socialist organizations and the Fabian Society, a more or less independent organization, opposed the war before it began. After the invasion of Belgium, however, the British Socialist party and the Labor party as well as the Fabian Society came to favor it and support the Government. The Independent Labor party has taken a more consistent stand against the war. Its conference at Norwich on April 5 and 6 considered the matter fully and defined its position.

France.—The French Socialists now have 102 out of 584 members of the Chamber of Deputies and 1,400,000 votes. Here the socialists are practically a unit in the support of the Government in its war policies. In this respect the French socialists are probably more universally agreed than the socialists of any other nation. Two famous members of the French socialist movement, Jules Guesde and Marcel Sembat, were given positions in the Cabinet and various groups of socialists and labor organizations have with practical unanimity supported the Government.

Belgium.—The Socialists had 40 of the 186 deputies of the Belgian Parliament and about 600,000 votes. The party, in common with all socialist organizations, opposed militarism and the war with all the means at its command until the war broke out. They then went to the support of the Government, voted the war credits and threw their whole and united strength into the war. Emil Vandervelde, one of the best known socialist leaders of Europe and chairman of the International Socialist Bureau, was given a place in the Ministry.

Italy.—In Italy the Socialists have 79 deputies and over 1,160,000 votes. The party as a whole has fought consistently to keep the country out of the war. It has steadily and openly opposed the war and continues to do so. On May 20 when the question of granting special powers to the Premier was up, the Socialist deputies voted solidly against the motion.

Serbia.—The Socialists had two seats in the Serbian Parliament and about 25,000 votes. The party fought against the war and for a federation of Balkan states. The representatives refused to support the Government at the outbreak of the war.

UNEMPLOYMENT

JOHN B. ANDREWS

Extent of Unemployment.—While in the absence of official statistics no one can tell exactly how many wage-earners were out of work during the winter of 1914-15, it was manifest that an unusual and alarming

amount of unemployment existed. On the basis of a canvass of the industrial policyholders of the Metropolitan Life Insurance Co., it was estimated in January that 442,000 persons were out of work in New York City alone. This estimate was confirmed by an intensive study made by the Federal Bureau of Labor in the following month, when conditions had slightly improved. On the basis of the numbers found unemployed in certain typical blocks the total number unemployed in the whole city was set at 398,000. A police census in New York on the night of Jan. 30 found over 26,000 homeless persons sleeping in cheap and free lodging houses, in employment offices, in saloons and in unprotected places, such as bridges, streets and parks. In March and April the New York canvass of industrial policyholders was repeated in 15 other manufacturing centers. Eleven and one-half per cent. of those canvassed were entirely unemployed and 16.6 per cent. more were working only part time. In March also the president of the American Telephone and Telegraph Co. stated in his annual report that there were "2,000,000 persons unemployed in the United States." The depression appeared to involve all lines of work except agriculture, concerns making goods previously imported and those receiving war orders. It is probable that unskilled and foreign-born wage-earners were thrown out of work even more frequently than the skilled and the native-born.

Agitation.—The seriousness of the unemployment situation was reflected in the abundance of discussion and of action against unemployment. Indeed, the year 1915 will long be regarded by students of the unemployment problem as epoch-making, in that for the first time unemployment seized the attention of leaders of thought and action as an American social and industrial problem. During the months of the long depression, education was pushed forward on the subject by unprecedented publicity of every description, from newspaper cartoons to scientific programmes for prevention. Noteworthy official reports were issued by the Chicago Municipal Markets Commission and the California Commission of Immigration and Housing. The American Association on Unemployment, in cooperation with the Association for Labor Legislation, brought out a "Practical Program for the Prevention of Unemployment" during the winter, and in November a "Survey of Unemployment," describing the success of the various measures taken for relief and prevention. A marked feature of the agitation were the numerous meetings held by churches, trade unions, civic and commercial bodies, public officials and other interested groups, as well as by the unemployed themselves.

Organization.—The absence or inadequacy of means for dealing with unemployment is evident in the number of new organizations and special committees of existing societies formed during the winter. Many such emergency bodies were formed for a single purpose, most often that of relief work, but the distinctive feature of the winter's organization was the creation of what may be called "general purpose" committees, in which were centered the community efforts to meet the situation. Such "mayors' committees" and "citizens' committees" were formed in over 40 cities and special committees of chambers of commerce were active in at least a dozen other municipalities. An important permanent organization affected during the winter was that of the Massachusetts branch of the American Association on Unemployment, whose purpose is to push preventive measures and to coordinate the various efforts against unemployment in that state.

Emergency Relief.—The occasion called forth from citizens the country over many hundreds of thousands of dollars which within a very brief period were expended in temporary relief. Bread lines and soup kitchens were maintained in many cities. Through the popular "Bundle Day" movement several communities distributed large quantities of old clothing. More adequate provision was made for shelter of the homeless unemployed. The Chicago and New York municipal lodging houses were made agencies of permanent constructive value in the care of the homeless

through the employment of trained social investigators who secured the appropriate individualized treatment for the inmates. The bulk of the care of destitute unemployed families probably fell on the permanent private charitable societies and public departments of charities. Fifty-five such organizations in 40 different cities reported to the American Association for Labor Legislation that their expenditures for relief were 90 per cent. larger in the winter of 1914-15 than in the same period two years before. There was, however, a strong sentiment that the only appropriate form of relief for the unemployed was that of employment. Accordingly increased use was made of such forms of relief work as laundries, rock piles and wood yards. Householders were urged to provide odd jobs. Especially in the east, emergency work rooms were opened where the services of the unemployed were often utilized in making articles for the war sufferers.

Separation of Unemployable and Unemployed.—Partly as a result of the emergency pressure there came into public recognition as never before the injustice of failing to distinguish and actually to separate the unemployable from the unemployed. The necessity for more adequate provision for certain classes of unemployables, such as penal farms for "won't-work's" and special workshops for the handicapped, was brought to public attention and some promising efforts to supply these needs have been begun.

Vocational Training. — Important experiments in vocational training for the unemployed, in the form of training classes with scholarships for unemployed girls, were carried on in New York during the winter. Many workers were reëmployed at higher wages as a result of the training received. In the autumn plans were made in that city for similar classes for unemployed minors as a part of the public school system.

Employment Exchanges. — During the winter also the public came to accept as the first step in the organization of the labor market the establishment of a system of public employment exchanges. While Congress delayed action, the Department of Labor, under limited powers, in coöperation with the Department of Agriculture and the postal authorities, established the beginnings of a Federal system of employment bureaus. Labor officials in five western states organized the National Farm Labor Exchange to direct the harvest hands north from state to state as the season advanced. Many thousands of men were handled, and in spite of the handicap of an unusually late harvest, the work represented a considerable advance over the undirected wanderings of former years. Other important steps toward the organization of the labor market were the passage of good laws for public employment bureaus in the industrial states of Illinois and Pennsylvania and, following 1914 legislation, the opening of six well equipped public employment bureaus in New York State. California, Iowa and New Jersey also enacted laws upon this subject. A number of states adopted stringent regulation of private employment agencies, and Idaho followed the example of Washington in 1914 and passed legislation designed to abolish all private fee employment bureaus, supplementing it by a law which required every city, town and village to open a public office. (See also XVI, *Labor Legislation.*)

Public Work.—For the first time, too, definite propaganda for early planning of public improvements won the consideration of many public officials, some of whom found it practicable under existing conditions to employ upon public works considerable numbers of the unemployed. Fifty-six cities reported to the American Association for Labor Legislation an expenditure of $3,600,000 in this way. A large majority of the cities state that the experiment was successful, giving work where it was needed and making necessary public improvements at reasonable cost. Several communities are developing systematic plans for the concentration of public work in dull seasons. One city, Alameda, Cal., actually passed an ordinance levying one cent on every $100 of taxable property annually for this purpose. Idaho enacted legislation unique in America which recognized the "right

to work" by providing 60 days of public work yearly for every unemployed citizen (Laws of 1915, Ch. 27). (See also XVI, *Labor Legislation.*)

Regularization of Employment.—No single development of the year was of greater interest or significance than the rapid spread of the idea that the problem of regular employment of labor is the immediate concern of private employers, who must meet this issue in their own establishments through regularization. The formation of employment managers' associations in New York and Philadelphia in addition to the pioneer society in Boston is noteworthy in this connection. Another important impetus toward regularization is found in the 1915 legislation on public employment exchanges in Illinois and Pennsylvania, which includes definite provisions for encouraging the regularization of private industry. As an emergency measure, many unemployment committees, notably the New York mayor's committee and that of the Detroit Board of Commerce, urged employers to retain their whole force on part time rather than to reduce numbers. The Board estimated that 15,000 persons were kept at work because of its appeal.

Unemployment Insurance.—Out of the recognition of the permanent aspects of the problem, a beginning was made of definite propaganda for compulsory unemployment insurance. The principle gained increasing support from many publicists, received formal endorsement from a number of labor organizations, and was recommended in the report of the Commission on Industrial Relations (see XVI, *Labor*). The Republican party platform in Massachusetts in 1915 contained a declaration in favor of consideration of state unemployment insurance, and bills are being prepared for submission to the legislature.

Summer Improvement.—As early as February unemployment had begun to decrease in certain lines of work and the improvement continued during the summer. The change can be traced largely to the effects of the European War. The trade in war munitions created a strong demand for machinists and the cessation of immigration made unskilled labor scarce, but there was still comparatively little work for clerical and mercantile employees. A census taken in New York City in August by the Federal Bureau of Labor and the Metropolitan Life Insurance Co. showed a reduction of unemployment to 8.2 per cent. In the far West, however, unemployment was still abnormal during the summer. A canvass of the industrial policy-holders of the Metropolitan Life Insurance Co. in 12 Rocky Mountain and Pacific Coast cities during June and July found 12.9 per cent. of the wage-earners canvassed entirely out of work and 20.2 per cent. more working only part time. Information from charitable societies and public employment bureaus indicated that in November, 1915, unemployment was about a third less than in November, 1914.

Preparedness for 1915-16.—The growing conviction that unemployment is a complex problem of American industrial life, continuing in comparatively good times as well as in comparatively bad times, and that nothing short of organized preparedness will prevent the recurrence of its human suffering and social waste, is evident in the consideration given remedies for unemployment in the late summer and autumn of 1915. A considerable number of communities surveyed their resources and worked out plans for the relief and prevention of unemployment locally. On a larger scale, the committee on unemployment of the New York State Conference of Mayors held a conference with experts in November and proposed to formulate an unemployment policy for the cities of the state on the basis of the advice received. The Illinois legislature of 1915 created a commission to study unemployment in that state and to report on possible remedies. In August the Federal Department of Labor held a conference on unemployment in San Francisco, attended by delegates from city, state and Federal public employment bureaus. The extension of these agencies and the provision of public work in times of unusual depression were emphasized. It is expected that a similar conference will be held annually.

CHARITY

WILLIAM T. CROSS

Development of Social Work.—The year 1915 has been notably one of increasing coherence in work for social welfare. This tendency was signalized by the discussion for the first time at the meeting of the National Conference of Charities and Correction of the professional character of social work. It was maintained on the one hand that social work is not a profession because the agent is only a mediator between recognized professional groups and practical problems, that these activities have not in themselves definite, specific ends. On the other hand it was claimed that social work is going through the same stages of professional development as have law, medicine, engineering, etc., and that it is subject to many technical requirements. The comprehensive treatment of individuals and families, or case work, and its relation to general social reforms has come into clearer recognition than before, the idea pervading newer methods of work for many classes, such as the poor, the criminal, the child, etc. The National Conference at Baltimore registered the largest attendance in its history, 2,600. State conferences of charities, a complete account of which has been given during the year for the first time, are rapidly increasing in number and in scope of service, two new ones having been organized in Kentucky and West Virginia. There is an apparently growing movement to establish in each state, as now exist for example in Arkansas, Illinois, Missouri and New Jersey, centralized agencies to secure desirable social legislation.

The War and Charity.—Since the outbreak of the European War it has been common for charitologists to remark upon its effects on philanthropic activities in the United States. The first effect, undoubtedly, was that of economic constriction and of uncertainty, a few associated charities actually suspending operations, many voluntary organizations limiting their expenditures, and practically all of them adapting their methods of appeal so as to compete successfully with the unusual demand for relief abroad. On the heels of this development came the doubling, and sometimes even quadrupling, of the burden of unemployment (see *Unemployment, supra*). Expenditures for relief had to be increased in many cases 50 per cent. and new plans of field work had to be inaugurated. Both on the side of revenue and on that of expenditures, organized charity suffered from an economic situation quite beyond its control, and in some instances the quality of service has had to suffer in order to increase material relief. The chief belligerent nations have anticipated the effects of war on internal development, and have provided fairly adequate schemes of industrial control and public works. But the United States has had no such policy of domestic preparedness. The lull in immigration (see *Immigration, supra*) has facilitated the process of assimilation, and has lightened the burden upon those charitable activities in which the immigrant is an important factor. To a very noticeable extent, foreign relief work has made heavy drafts on the sources from which voluntary charities get their support. For example, one city reports $122,000 raised by means of bazaars and similar ways for foreign relief, and only $22,000 total voluntary contributions for the local Associated-Charities work. However, the results for private charity are largely counteracted by the increase of human sympathy. A concomitant of this, though of questionable value, have been the multitude of lurid appeals for aid to be seen in the public press and elsewhere. But the undeniable evil effects of the war on charity have not been unmitigated. There is an increasing unity of social policy. As in industry, the retrenchment affects mainly those activities representing the exploitation of new lines of service. The tendency toward charity of the grosser material relief sort is counterbalanced by a general awakening to the need of having more of the burdens of charity borne by the state. Moreover, the advanced meth-

ods of European nations in caring for the special classes and preventing distress, for example social insurance, credit unions, and institutions of the colony type, are being considered here as never before. The dependent and defective classes in this country are not worse off than they were before the war, and it can scarcely be doubted that our present increased concern for their condition augurs well for them.

Community Foundations. — While the original community foundation, or trust fund, was established in Cleveland early in 1914, only in 1915 has the plan gained headway and widespread attention. An essential of success, the popularity of the idea with donors, has been demonstrated, as much as $40,000,000 having been written into wills under the provisions of the Cleveland fund. Two other primary requirements, breadth of conception and practicability from an administrative standpoint, likewise seem to have been established. The first act of the Cleveland body, a preliminary survey of the city from the standpoint of charitable needs and of adequacy of existing agencies, has brought out ideas both for the foundation and for other organizations. The character of this new enterprise in charity is worthy of note. A leading banking institution, simply through resolution of its directors, establishes a fund and rules governing its administration, inviting gifts and bequests under the terms indicated. The administrative body is not incorporated, as are, for example, the Rockefeller and Russell Sage Foundations. Of the governing body of five, two are appointed by the bank and the remainder severally by designated public officials. The activities of the trust are limited to the city in which it is established. While profiting from the breadth of conception of the two national foundations just named, these community trusts apparently have more directly in view certain recognized institutions and other forms of philanthropic endeavor. While the use of the income and, under specific conditions, the principal, are determined by the entire committee, the bank having only a minority representation, the organizing bank is the permanent trustee of the funds. Following the initiative of Cleveland, community foundations have been established, or are being formed, in the following cities: St. Louis, Chicago, Milwaukee, Minneapolis, Spokane, Los Angeles, Houston, and Attleboro, Mass. In general, most of these cities follow the Cleveland plan. This is essentially a voluntary, private undertaking, though with a public objective and under public supervision, and it has the especial virtue of unifying and coördinating endowments. There is a striking variation from the usual type, and one full of suggestion, in the case of the Houston foundation. It partakes of the spirit of the West. It has been established by ordinance of the city council as a department of the city government, thus not being tied up with any private financial institution. This has required some modifications of the Cleveland plan as to control of funds. Furthermore, its functions include the ordinary public welfare work of the city and the endorsement or licensing of private charitable agencies.

Governmental Participation in Welfare Work.—The year has been noteworthy for the further development of the theory of the duty of, and capacity for, social-betterment work of governmental agencies. Probably the most popular manifestation of this tendency has been the so-called mothers' pensions legislation. During the year 13 states have passed new laws or amendments to old ones. The most noteworthy legislation has been that of New York State, because of the wide and fairly equal division of opinion manifested, and the intelligence and detail with which the merits of the measures presented were discussed. The new law provides, with the usual restrictions, for the administration of pensions to dependent mothers by local boards of child welfare, under state supervision (see also *Child Welfare, supra*). The year has seen also a distinct rally to public relief of the poor in their homes, which for many years has been discouraged by leading charitologists, at least so far as the larger cities are concerned. This change in

attitude has been anticipated since American cities began to be better governed. However, even now the advocates of the new idea have no convincing programme for the older and larger cities. A manifestation of the changed attitude occurred at the meeting of the National Conference of Charities and Correction, where the system of outdoor relief of the city and county of Denver was described. There the public office is being administered according to the scientific principles long contended for by voluntary charity organization societies. More recently the same idea has been put in practice in Los Angeles County, California. A somewhat different plan, savoring, however, of the principle just explained, is being adopted in a number of Iowa communities, where a single agent is employed both as superintendent of the voluntary associated charities and as public overseer of the poor, and similar examples may be found elsewhere. Quite as distinctly as in respect to poor relief, however, this idea of increasing governmental participation extends to recreation, the newer and more comprehensive programmes of child welfare, city and county boards or departments of public welfare, and other branches of social work.

The Insane.—Probably the most notable legislation of the year relating to the care of the insane is that of South Carolina, where the entire programme of the National Committee for Mental Hygiene for the improvement of conditions, involving an initial appropriation of $600,000 for a period of four years, was adopted. In North Carolina the method of commitment and transportation of insane persons has been humanely improved, the hospitals sending nurses out to receive patients. In Rhode Island it has been provided that women patients shall be accompanied by women attendants from the state hospitals as well as by the committing officer. Connecticut has provided for the mental examination of all inmates of town almshouses at least once in six months, in order to clear the almshouses of insane, and has raised the weekly per capita allowance for the maintenance of patients in state institutions. Among the several states which have provided for new buildings and extensive improvements, probably the most liberal appropriation for the care of the insane is that of New York, where approximately $1,500,000 has been given for the establishment of new buildings at the state hospital at Yorktown Heights which provides for the insane of the metropolitan district. A very important recent development in this field has been the increasing activities of the National Committee for Mental Hygiene founded through the efforts of Clifford W. Beers. Its special investigations in Connecticut, Pennsylvania, South Carolina and elsewhere have uniformly resulted in practical improvements of a constructive and comprehensive character. (See also *Social and Mental Hygiene, supra.*)

War Relief.—It is impossible to make a complete or even a comprehensive statement at this time about the character of relief operations on behalf of sufferers from the European War. The best known and most completely organized agency of this kind, the American National Red Cross, sent to various warring countries between Aug. 1, 1914, and July 8, 1915, 71 surgeons and 253 nurses in 16 units, and 43 others connected with the Sanitary Commission operating in Serbia and Montenegro. Expenditures for the people of belligerent nations were made for the most part in coöperation with hospitals, relief committees, and other natural and established relief agencies. The length of service of the American Red Cross abroad has exceeded all precedents and, on account of the great cost involved, this organization has been withdrawing its relief units. The American Red Cross Sanitary Commission, financed largely by the Rockefeller Foundation, made a remarkable record in exterminating the appalling epidemic of typhus fever in Serbia, under the direction of Dr. Richard P. Strong (see also XXVIII, *Medicine*). At the same time, by means of vaccination, the sanitary corps prevented a recurrence of cholera which raged during the Balkan wars. Contributions to the American Red Cross for the period mentioned above totalled $1,635,124.

In giving the following review of the activities of several representative American agencies for relief abroad, it must be borne in mind that these are but a few among many such offices in this country, each having in some instances numerous branches for securing contributions. One agency here described publishes a list of 36 foreign offices with which it coöperates. There are indications that the present winter may bring about a much closer integration of foreign relief bodies. Many of these agencies operate exclusively among the sympathizers with certain nations engaged in the conflict, their publications being for the most part in foreign languages. At a meeting of officials of representative organizations in December an arrangement was made for the Red Cross to conduct in New York City an information bureau on war relief and to issue a periodical bulletin on the activities and needs of the various relief bodies.

The Commission for Relief in Belgium, reporting on June 30 for the period of about eight months since its organization, has made one of the earliest and widest appeals to the sympathies of Americans of any of the various committees. Its relief operations have been carried on under embarrassing circumstances. It has organized nearly 2,000 groups abroad for the collection of food and money, the distribution of which has been in the hands of over 4,000 separate committees in nearly every commune of Belgium. Up to the date given the committee had in stock or had delivered over $45,500,000 worth of foodstuffs. To this figure should be added $4,800,000 worth of services donated by transportation companies and other agencies. A unique service has been rendered through a financial relief and exchange department which has made remittances available and equalized the exchange of money in such a way as to forestall depreciation through local issues. Expenditures of the Commission to the first of September averaged about $5,000,000 a month.

The Committee of Mercy was established to succor innocent non-combatants made destitute by the war. During the first 14 months of its existence it raised $368,116.28. Its funds have been devoted in varying amounts (given in round numbers) to the following objects: $50,000 to be administered by the Commission for Relief in Belgium; $85,000 for the American Women's War Relief Fund, doing work among Belgian refugees at Paignton, England; $25,000 for a Serbian Fund, which was devoted to the distribution of relief supplies in and about Nish and the transportation of foodstuffs from farms in the lower districts of Serbia; $11,400 for relief of Polish refugees; $5,000 under the auspices of the Albanian Relief Fund; and sundry amounts elsewhere. In coöperation with the American Committee for Armenian and Syrian Relief more than $131,000 was raised during September.

The work of the Vacation War Relief Committee is a good example of the adaptation of the idea of direct relief, its purpose being to help the unemployed women of America through furnishing them work upon materials consumed in relief operations abroad. Its receipts and disbursements up to Oct. 1 exceeded $140,000. The American Fund for French Wounded, working in coöperation with the Vacation War Relief Committee and the American Red Cross, having branches in 26 cities of the United States, has received contributions amounting to $14,393.42. It has also collected and transported about $150,000 worth of supplies. The War Relief Clearing House for France and Her Allies renders its service chiefly through offering free transportation from New York City to Europe, free entry into the Allied countries and free distribution of contributions received. The 15,000 cases of supplies it has sent have been chiefly for non-combatants. The American Committee of the American Ambulance Hospital in Paris has served to maintain at Neuilly an institution rapidly transformed into a hospital shortly after the invasion of France, the maintenance of which is costing its American supporters nearly $1,000 a day. Up to Sept. 1 its maintenance had cost about $242,662. Arrangements are now being made for a supplementary service for semi-convalescent patients.

XVI. LABOR AND LABOR LEGISLATION

LABOR

JOHN B. ANDREWS

TRADE DISPUTES

The Strike Record.—The year 1915 was marked by no such industrial conflicts as the disturbances of 1913 and 1914 in Michigan, West Virginia and Colorado. But particularly in the latter half of the year in establishments making war supplies there were a large number of short local strikes. For the first nine months of the year, the Federal Bureau of Labor reports 1,126 strikes, a considerable increase over the 1,080 reported during the same period in 1914. By far the greatest number of disputes, 272, occurred in the metal trades, and the building trades were second with exactly 200.

The Roosevelt Strike.—In January two workmen were killed during a strike involving two plants of the American Agricultural Chemical Co. at Roosevelt, N. J. The wages of laborers at these plants were reduced from $2 to $1.60 a day in October, 1914. Early in the following January the men struck for a restoration of the old rate. On Jan. 19 a crowd of strikers met a train on which strike-breakers were expected, and with the permission of the train crew a committee searched the cars for "scabs." The committee announced that no strike-breakers had been found. The strikers claim that 30 armed guards then rushed out of the nearby plant and opened fire, while the guards say they did not shoot until they were fired upon. In the shooting one man was killed, one fatally wounded and 18 others seriously injured. The guards, who had been sworn in as deputy sheriffs, were arrested for manslaughter. When released on bail they returned to their guard duty at the plant. They were then rearrested and held without bail for first-degree murder, on which charge a grand jury indicted 26. At the trial in May, one prisoner could not be identified and was discharged; nine others were convicted of manslaughter. Their cases were immediately appealed to the state Court of Errors and Appeals, which has not handed down its decision. Pending the outcome of this appeal the other prisoners were released on bail. The strikers returned to work early in February, receiving an increase of 20 cents a day, half the amount they had asked for. The company also agreed to take back married men first and to make no discrimination against union members.

The Bayonne Strike.—Another New Jersey strike in which fatalities occurred was that of the employees of the Standard Oil, Vacuum and Tidewater Oil plants in Bayonne in July. The strike originated on July 16 among the still cleaners, who were refused a 15 per cent. increase in wages. These men clean the vats in which oil has been refined and must work under temperatures frequently as high as 200° F. Before the strike they received $2.25 a day. The strike soon spread to other employees of the Standard Oil plant and to the Vacuum and Tidewater companies. The companies were supplied with armed guards by various detective companies. On July 20 the police tried to break up the crowds who collected in front of the Standard Oil plant and in the ensuing mêlée, in which the guards joined, a striker was killed and a police officer wounded. Disorder between the guards and the strikers, largely centering around the Tidewater plant, continued for several days and two more strikers were killed. On the 24th the sheriff of the county, Eugene F. Kinkead, took

drastic action and succeeded in breaking up the strike. He first arrested 30 of the guards and the superintendent of the Tidewater plant on the charge of "inciting to riot." Within a few days he also arrested Jeremiah Baly, the chairman of the committee in charge of the strike, and Frank Tannenbaum, an I. W. W. organizer, and forbade "outside agitators" entering Bayonne. He then secured a promise from the superintendent of the Standard Oil plants that he would recommend an increase in pay if the men would return to work. Next the sheriff addressed a meeting of strikers and on the strength of the superintendent's promise succeeded in inducing the men to go back to work. Finally, he disarmed and arrested the remaining 99 guards at the Tidewater plant, again on the charge of "inciting to riot." When the strike was over, however, the sheriff appears to have released his various prisoners without bringing them to trial. The striking employees received wage increases of approximately 15 per cent.

Strikes for the Eight-Hour Day.—Probably the most numerous and best known strikes in 1915 were those for the eight-hour day carried on in the East among the machinists, especially those manufacturing munitions, and among women workers in a few towns where the machinists struck. One hundred and two distinct strikes and six lockouts of machinists were recorded in the four months from July to October. Bridgeport, Conn., was one of the storm centers of the movement. A jurisdictional dispute in the middle of July between carpenters and millwrights employed in the construction of a new building for one of the companies manufacturing munitions was followed by a number of strikes among machinists and others engaged in munitions plants. About a month later the first strike occurred among the women workers. Then there was a veritable epidemic of strikes for a few weeks. In a single day in August ten strikes were called and 14 were going on at once. Fifty-five strikes in Bridgeport were reported by the newspapers within two months and a half. In nearly every case the desired eight-hour day was gained. The International Association of Machinists soon decided to take advantage of the prosperity of the trade on account of war orders and to secure the eight-hour day throughout the East (see *Labor Organizations, infra*). Many strikes followed, notably in various Connecticut cities, in Springfield and Worcester, Mass., and in Schenectady, N. Y. In several of these places, as in Bridgeport, other workers made the same demands as the machinists.

Alleged Foreign Interference.—Charges were made that the labor disputes in the munitions plants and certain strikes among New York freight handlers were fomented by agents of the Austrian and German Governments in order to stop the exportation of war supplies. James F. J. Archibald was arrested in London in early September and dispatches for the Austrian Government taken from him which outlined plans to stir up strikes among Austrian workmen in steel and munitions plants. As a result of these activities, the United States requested the recall of Constantine Dumba, the Austro-Hungarian Ambassador. The executive council of the American Federation of Labor in its report to the annual convention in November, 1915, admitted that attempts had been made to corrupt certain labor leaders but stated that they had not succeeded. The U. S. district attorney in charge of the prosecution of German plots also said that such efforts had been blocked by the refusal of the more prominent labor leaders to accept bribes. Dr. Dumba and Count von Bernstorff, the German Ambassador, acknowledged that they had warned German and Austrian subjects that they were guilty of a serious offense against their country by working on war munitions for the Allies and that they supported such men who left their work in the interval of finding them other employment. (See also I, *American History.*)

Minor Disputes.—Other noteworthy strikes were those of certain canal-boat "captains" in Pennsylvania, of milk drivers in New York city and of street-car employees in Wilkesbarre, Pa. The canal-boat "captains" operated coal barges on a canal owned by

the Lehigh Coal and Navigation Co. running between the anthracite coal regions and Philadelphia. They asked for ten cents increase on each ton of coal, claiming that after paying for their helper and their mules, they had left only $8 to $9 weekly for an 18-hour day. The Company stated that as the canal was not profitable and was kept open only to avoid litigation, wages could not be raised. The strike failed, and the men, who were not organized, returned to work at the old rates. Certain milk drivers employed by the Sheffield Farms-Slawson Decker Co. in New York City struck in the late fall. Chief among their demands were those for a monthly rest day, the abolition of fines for coming late to work, and the cessation of discrimination against union members. The street-car employees in Wilkesbarre struck over the interpretation of an agreement and riots took place when attempts were made to operate the lines. At the end of November several attempts to induce the two sides to arbitrate their differences had proved unavailing.

Boycotts and Blacklists.—On Jan. 5 the U. S. Supreme Court reaffirmed the judgment of $252,130 against 186 members of the Hatters' Union for boycotting the makers of Danbury hats, D. E. Loewe & Co. (Lawlor *v.* Loewe, 35 Sup. Ct. 170). This was the final settlement of a case which had been in the courts since 1903. The decision held that a boycott conducted by a union against a firm whose products are sold in interstate commerce is a violation of the Sherman Anti-Trust Act. It was the first case holding the members of a labor union liable under the Act for the illegal actions of their organization and the first time that the triple-damages penalty of the Act had been assessed against the members of any organization. At the convention of the United Hatters of North America held in the spring it was decided not to pay the judgment against the Danbury hatters but to levy an assessment among the members of one cent on each $1 of wages weekly for a relief fund. The American Federation of Labor at its San Francisco convention in November called for the contribution of one hour's earnings from each member for the relief of the hatters. Certain representatives of labor believe that the labor clauses of the Clayton Anti-Trust Act (*A. Y. B.*, 1914, p. 434) will prevent further verdicts of this nature, but there is an opposing belief that they do not apply to such cases.

Conciliation and Arbitration.—The arbitration of labor disputes proved unusually successful in 1915, several serious and long-continued differences being adjusted in this way. Up to Nov. 13, the Federal Department of Labor had exercised its good offices in 74 disputes directly involving several thousand workmen. An "amicable adjustment" was reported in 35 cases; in three cases the Department was "unable to adjust"; 29 cases were pending; most of the other disputes were settled without the intervention of the Department.

A coal strike in eastern Ohio involving 16,000 miners, which had lasted over a year, was settled early in May through the efforts of mediators. The issue concerned the basis of payment—whether on the "run-of-mine" or the "screened-coal" basis. According to the latter basis, on which the miners had formerly been paid, the men receive pay, not for all coal mined, but only for that remaining when it has been run over a screen. The Ohio legislature had passed a law requiring payment on the "run-of-mine" basis, to take effect on May 20, 1914. When the men's agreement expired on March 31, 1914, they proposed to continue working on the old basis until the law went into effect and then to have a new agreement drawn up. The operators refused this proposal and shut down the mines. Thus the dispute began as a lockout. The operators declared the "run-of-mine" law unconstitutional and secured an injunction restraining the state officials from enforcing it, but the U. S. Supreme Court upheld the law (Rail and River Coal Co. *v.* Yaple, 35 Sup. Ct. 359, Feb. 23, 1915). The state's attorney-general, however, rendered an opinion that coal going over the screen could be paid for at a different rate from coal going through the screen, but the strikers declined to accept such a split

rate. No attempts were made to run the mines with strike-breakers and no cases of violence were reported. In January, when the operators decided to evict men from company houses and to import strike-breakers, the arrival of two mediators from the Federal Department of Labor caused them to defer this policy. In April a conference of the two sides was called by the Government. The Federal mediators and the chief mine inspector of the state, representing the governor, aided the two parties in coming to a satisfactory agreement. The operators conceded the rate of payment per ton asked by the men and the miners agreed to certain changes in working conditions which it was believed would decrease the danger of local strikes. (See also XVIII, *Mining and Ore Dressing.*)

Through the efforts of the manufacturers of building materials a controversy between Chicago contractors and the principal building trades, which had lasted for more than three months, was settled in July by arbitration. The point at issue which had previously prevented agreement seems to have been the insistence of the carpenters that they would work only on materials furnished locally. As a result the materials manufacturers closed all their plants of every description throughout Illinois, Indiana, Ohio and Wisconsin so that no work could be done independently, and then undertook to arbitrate the differences between the unions and the contractors' association. This arbitration was successful. The unions conceded the open market for materials and agreed to submit to arbitration any differences arising during the three years of the agreement. They secured the desired increase in wages from 65 cents to 70 cents an hour and the continuance of the closed shop.

Another Chicago strike ended by arbitration was that of 14,000 employees on the elevated and the surface lines. The strike was called at midnight on June 20, and lasted but two days. During that brief period, street-car and elevated traffic was at a standstill. No attempt had been made to operate the cars, but large numbers of strike-breakers were being brought into the city when the mayor forced the contestants to arbitrate their differences. He was the third member of the arbitration board. The decision of the arbitrators was in the main favorable to the men. They were granted wage increases and the maximum wage rate after four instead of five years of service. The elaborate schedules of hours necessary on street railroads, overtime pay and other working conditions were also somewhat modified to their advantage. The companies not only recognized but coöperated with the union by allowing leaves of absence on union business, the men to be restored to their former positions on their return.

An agreement by an arbitration board which is said to be unsatisfactory to both sides was made in the spring between 98 western railroads and 64,000 locomotive engineers, firemen and hostlers. The men asked for higher wages on the ground that the increased "productive efficiency" of railroad equipment involves a greater strain on the men, for which they should be rewarded. The verdict of the arbitration board is characterized as an unsatisfactory compromise which really settled none of the points at issue but which only secured industrial peace for another year.

An important event of the year in the field of industrial conciliation was the breakdown and reconstruction of the famous "proctocol of peace," adopted by the cloak, suit and skirt industry of New York city in 1910 (*A. Y. B.*, 1913, p. 416). A controversy over the "right to discharge" had been smouldering for some months. The manufacturers claimed that in order to maintain shop discipline their right to discharge must be unlimited. The unions stated that piece-prices for each new style of garments were being constantly set by bargaining between employer and a shop committee and that the ultimate right to discharge could be used to intimidate shop committees, thus lowering wages and weakening the union. The protocol was terminated on May 20 by the manufacturers in a statement blaming the unions for the act. By

July employers and employees had made conflicting demands on each other and a strike appeared imminent. At this crisis five prominent citizens, emphasizing the suffering and injury that a strike would cause, appealed to the factions to submit their differences to arbitration. Their appeal was successful and both sides requested the mayor to appoint a council of conciliation which should work out a new agreement. The resulting agreement is no longer called the "protocol" but in spite of certain changes is the same in essential principles. It is to run for two years instead of being terminable at will. The machinery for dealing with grievances was somewhat simplified. The former machinery, the committee on immediate action, the board of grievances and the board of arbitration were all abolished, but the settlement of differences by arbitration was not abandoned. The council of conciliation appointed by the mayor is retained as supreme arbitrator and trial boards representing both sides with an impartial chairman are to be constituted when necessary. Both time and piece rates were increased. The joint sanitary control of the shops is continued and collective bargaining is provided for. In regard to the "right to discharge," over which the dispute originated, it is merely stated that "it shall not be exercised unjustly, oppressively or with intent to injure the union." Individual cases are to be arbitrated as they occur.

Court Decisions.—Judicial decisions in 1915 generally upheld protective legislation but were less favorable in regard to the constitutionality of laws involving the personal rights of labor (see also IX, *Law and Jurisprudence*). In Coppage *v.* Kansas (35 Sup. Ct. 240, Jan. 25, 1915) the Kansas anti-coercion law, which made it a misdemeanor to threaten to discharge workmen on account of union membership, was declared unconstitutional by the U. S. Supreme Court. The decision, in which six members of the Court concurred, invalidated similar legislation in 14 other states. The case arose through the discharge of a railroad switchman who refused to sign an agreement giving up union membership. The majority opinion stated that the statute indirectly deprived the employer of property since it curtailed his financial independence which includes the right to make contracts at terms as favorable as possible and to obtain the full benefits of his advantage in bargaining. This right might be limited when its exercise conflicted with the public health, safety or welfare, but these were not involved in the case. The corresponding right of employees to secure closed-shop contracts (if coercion, duress or monopoly did not occur) was mentioned. Reference was made to the Adair case (28 Sup. Ct. 277, Jan. 27, 1908) wherein it was established that employers may discharge employees because of union membership. The minority opinion upheld the act because it is in the public interest to encourage union membership and because the relative positions of employer and employee make some such protection necessary.

The Arizona alien-labor law, passed by popular vote in 1914 and requiring every employer of more than five persons to employ at least 80 per cent. of American citizens, was also held unconstitutional by the same Court (Truax *v.* Reich, 239 U. S. 33, Nov. 1, 1915). Several foreign governments had protested against the law as a violation of treaty rights. The Court said that it had already been established that aliens were entitled to the equal protection of the laws, which meant "equal laws for aliens and citizens." The law would exclude aliens from the state, since they could not live where they could not work, and as a result, though the power of admitting aliens is vested in the Federal Government the states could keep them out by such legislation as this.

On the other hand the New York law forbidding the employment of aliens on public works was sustained by the U. S. Supreme Court on Nov. 29 (Heim *v.* McCall *et al.*). The distinction made was that the New York statute concerned public work, not private employment, and that a previous decision some years before (Atkin *v.* Kansas, 24 Sup. Ct. 124, Nov. 30, 1903) had established the principle that "it belongs to the

state, as guardian and trustee for its people and having control of its affairs, to prescribe the conditions upon which it will permit public work to be done on its behalf or on behalf of its municipalities." The case had previously been carried through several courts with conflicting decisions (*A. Y. B.*, 1913, p. 421) and in March the Supreme Court had suspended the operation of the law pending its decision. Meanwhile the decision was rendered of little practical importance for New York by a legislative amendment permitting the employment of aliens when citizens could not be obtained. (See also *Labor Legislation, infra.*)

The courts were more friendly to purely protective legislation. The validity of the California woman's eight-hour law was affirmed by the U. S. Supreme Court on the ground that public welfare demanded a limitation of women's hours of work and that the eight-hour day was not an unreasonable extreme of regulation (Miller *v.* Wilson, 35 Sup. Ct. 342, Feb. 23, 1915). The New York law prohibiting night work of women was sustained by the highest state court, the Court of Appeals, also as a necessary health measure, both for the sake of women workers themselves and for their posterity (People *v.* Charles Schweinler Press, 108 N. E. 639, March 26, 1915). The case was immediately appealed to the U. S. Supreme Court, where it was still pending in December. Another pending decision on woman's work of great importance is that of the U. S. Supreme Court on the Oregon minimum-wage law for women and minors, which will determine the validity of this form of legislation under present constitutional limitations.

Another New York protective labor law held constitutional by the highest state court was the regulation designed to give employees in stores and factories one day of rest in seven. The court considered it, under modern industrial conditions, a reasonable restriction for the benefit of the public health (People *v.* C. Klinck, 108 N.E. 278, Feb. 5, 1915). The Massachusetts Supreme Court, however, took an unfavorable view of the constitutionality of restricting the daily hours of adult men in the case of employees in and about railroad stations where it was stated that the work was neither especially arduous nor unhealthy and that the element of public safety was not concerned (Commonwealth *v.* Boston & Maine R. R. Co., Nov. 23, 1915). The constitutionality of workmen's-compensation laws in several states, notably New York, California and Iowa, was tested in 1915. The laws were attacked on the ground that they deprived the employer of property "without due process of law" and were upheld as being a necessary and just change to meet present day needs (Jensen *v.* Southern Pacific Co., 109 N. E. 600, July 13, 1915; Western Indemnity Co. *v.* Pillsbury, 151 Pac. 398, Aug. 4, 1915; Hunter *v.* Colfax Consolidated Coal Co.).

After the passage of the Seamen's Act (see XX, *The Merchant Marine*), several rulings by the Attorney-General and by the Secretary of Commerce defined its operation. The Attorney-General ruled that the safety-appliance sections do not apply to vessels of foreign countries having "approximately" equal laws, and stated that the validity of the much-discussed provision that sailors on ships of any nationality could demand half pay and leave the ship in American ports must be determined by the courts. An important ruling by the Secretary of Commerce concerned the interpretation of the "language clause." This was said to mean that the fixed proportion of the crew might understand the officers' orders in any language, not necessarily in English. When the Act went into effect on Nov. 4, the Secretary ordered the collectors of customs to grant clearance to vessels whose crews did not satisfy the requirements of the law, provided the masters were unable to secure other sailors.

LABOR ORGANIZATIONS

American Federation of Labor.—The American Federation of Labor, which includes approximately three-quarters of the union membership in the United States and Canada, held its thirty-fifth annual convention in

San Francisco, Nov. 8-21. The report of the executive council emphasized the difficulties of organization during the year, due to the dislocation caused by the European War, and advocated a labor peace conference at its close. A resolution in favor of such a conference was adopted by the convention, but those in favor of industrial unionism, and the eight-hour day by legislation, were defeated. Provision was made for an investigating committee on unemployment and vagrancy. For the first time since 1908 a decrease in the membership of the American Federation of Labor was reported to the convention. The average paid-up membership for the year ending Sept. 30, 1915, was 1,946,347, a decrease of 74,324 from the membership in 1914. In September, however, the number of paid-up members was 1,946,347, a decrease of only 26,560. Out of 110 national and international unions, 34 organizations, including the Boot and Shoe Workers, Brewery Workers, Carpenters, Cigarmakers, United and Ladies' Garment Workers, Machinists, United Mine Workers, Painters and Western Federation of Miners reported a falling off of 118,019 members. The membership of 33 nationals was unchanged and 43 gained a total of 46,772 members. Most of the increases were small, of less than 1,000 each. Ten unions made gains of between 1,000 and 5,000 in membership and three, the Printing Pressmen, the Textile Workers, and the Teamsters, gained 6,000 members each. The gains of the unions increasing by more than 1,000 members during the year discussed is as follows:

Electrical Workers	2,760
Fur Workers	1,000
Hodcarriers	1,250
Musicians	1,500
Printing Pressmen	6,000
Pulp and Sulphite Workers	1,189
Railroad Telegraphers	2,000
Stonecutters	1,222
Street Railway Employees	5,000
Teamsters	6,000
Textile Workers	6,000
Typographers	1,034

Amalgamated Clothing Workers of America.—In 1914 many of the men's-clothing trade unions seceded from the United Garment Workers' Union, and formed the Amalgamated Clothing Workers of America, which was refused recognition by the American Federation of Labor. The policy of the Amalgamated Clothing Workers, as announced by its president, Sidney Hillman, was to obtain agreements with the manufacturers similar to the protocols in the women's-garment trade. For this purpose a number of small strikes were called in New York during the summer and one of 25,000 workers in Chicago in the autumn. The latter was not settled until December. Several clashes between the police and strike sympathizers occurred in which two persons were killed and several wounded. Both sides claimed victory. Agreements were secured with individual firms in several cities and with two manufacturers' associations in New York, but the union was said to be handicapped in obtaining protocols by the absence of strong manufacturers' associations in the men's garments trades similar to those formed by the makers of women's garments. The formation of the Amalgamated Clothing Workers led to the cessation of coöperation between the American Federation of Labor and the United Hebrew Trades of New York. The latter refused to unseat delegates from the Amalgamated Clothing Workers when ordered to do so by the American Federation of Labor and the Federation therefore directed all its local unions to sever connections with that body.

Industrial Workers of the World.—In order to differentiate itself from the Chicago or non-political branch of the Industrial Workers of the World, which is the one popularly associated with "I. W. W." activities, the Detriot branch at its annual convention in September voted to change its name to the "Workers' International Industrial Union." The agitation of the Chicago branch in 1915 appeared to be centered in Paterson, N. J. In November members were reported to be organizing the silk-mill workers. After the Paterson police had several times refused to allow Elizabeth Gurley Flynn to speak or to remain in the city, she was arrested on the charge of inciting to riot by a speech made during the strike of 1913, but was acquitted. She then announced that she would

obtain the arrest of the mayor and chief of police for limiting her constitutional right of "free speech."

Joseph Hillstrom, better known as "Joe Hill," a prominent member of the I. W. W., was executed for murder in Utah in November. Labor leaders charged that his conviction was due to his I. W. W. membership. Efforts to secure pardon or commutation of sentence made by the Swedish Minister and by President Wilson proved unavailing.

Strike Trials in Michigan and Colorado.—In Houghton County, Michigan, when Moyer, the president of the Western Federation of Miners, and other leaders arrested in connection with the strike in the copper mines (*A. Y. B.*, 1914, p. 416), came to trial, the prosecuting attorney had the indictments quashed. In Colorado, however, the governor denied a petition asking him in the interests of industrial peace to quash the indictments in connection with the coal strike. Louis Zancanelli, a striker, and John R. Lawson, an official of the United Mine Workers, were sentenced to life imprisonment for murder in cases arising out of the strike. Lawson was convicted for the shooting of a guard in a battle between guards and strikers, not because of actual participation in the crime but because as the labor leader in charge of the strike he was held responsible for all disorder. The case was appealed to the state Supreme Court, which stayed his sentence and released him on bail while considering his appeal for a new trial. The Court also barred Judge Hillyer, the presiding justice at the Lawson trial, from presiding over future trials of strike cases. It had been charged that Hillyer, before being made a judge, had been active in prosecuting strikers. It was also charged that the jury had been tampered with and testimony from a juror to that effect was secured, but the juror was later arrested for perjury. Lawson's case was still pending in December.

Rockefeller Plan for Labor Organization.—Following the visits of John D. Rockefeller, Jr., to his Colorado properties to investigate the labor conditions, a plan was announced for new machinery to adjust grievances and improve safety and sanitation among the miners of the Colorado Fuel and Iron Co. The plan, which was to run for three years, was accepted by the miners by a formal vote. It provides for the annual election by each camp of a number of committeemen, fixed in proportion to the number of workers, who are to confer with representatives of the operators in regard to working conditions, disputes and other matters of interest. For this purpose the camps are to be divided into five districts, in each of which conferences are to be held at least once every four months. Each district conference is to choose four joint committees on conciliation, safety, sanitation and education and recreation. An annual joint meeting of all the district representatives of employers and employees is also arranged. The president of the company is to appoint a special executive assistant to supervise the work for industrial betterment and to be chairman of an advisory board of company officials on the subject. Other provisions of the agreement include the eight-hour day and permission to the employees to hold meetings, trade where they please and have check weighmen, which were demands made by the men before the strike of 1914. The men are to be free to belong to unions or not as they please. The demand for the abolition of the guard system was not covered and those for increased wages, pay for "deadwork" and recognition of the union were denied. The plan is said to have been characterized by Mr. Rockefeller as "more democratic than unionism" because it represents all the workers, not simply union members. It is criticised as failing to protect committee members from discharge if they make unwelcome demands, as providing only for local meetings of employees without representatives of the company, as consequently giving no real power to the employees, and so unlikely to lead to any real improvement in conditions.

Chicago School Teachers' Union.—The Chicago Board of Education in September adopted a sweeping regulation whose purpose was to force all public-school teachers to give up their membership in the Teachers' Federa-

tion, a union affiliated with the American Federation of Labor. The Federation secured an injunction prohibiting the Board from enforcing the rule, on the ground that yearly contracts of employment had already been made with members of the union and that the rule was arbitrary and unreasonable, preventing membership in such bodies as the National Education Association. In a somewhat similar case in Cleveland (*A. Y. B.*, 1914, p. 423) the state appellate court upheld the superintendent in his discharge of union teachers as a proper exercise of discretionary power, which could be limited in such directions only by action of the voters.

Trial of Alleged Union Gangsters.—Eight men prominent in the International Garment Workers' Union were arrested in New York in May, charged with having murdered a non-unionist at their headquarters in July, 1910. The chief evidence leading to the arrests was the confession of a well known gang leader on the lower East Side. At the trial, however, five of the men were acquitted and the cases of two others dismissed by the judge. The other man was not brought to trial.

Rejection of the Proposed New York Constitution.—The Constitutional Convention which drafted the proposed new constitution for the state of New York was very niggardly in its provisions for labor, and the constitution was overwhelmingly defeated at the November election. Practically the only additional clauses in behalf of labor were those permitting compensation for occupational disease and the prohibition of tenement-house manufacture. Among the proposals rejected by the Convention were additional safeguards against the usurpation of the civil power by military tribunals, clauses increasing the possible scope of protective legislation and permitting systems of social insurance. (See also II, *The New York State Constitutional Convention.*)

INDUSTRIAL INVESTIGATIONS

Commission on Industrial Relations.—After holding numerous public hearings during the year, the Federal Commission on Industrial Relations went out of existence on Aug. 23. The Commission disagreed in its brief report on the causes and remedies of industrial unrest, made public at that time. Chairman Walsh and the three labor members signed a report written by Basil M. Manly, director of investigations, commonly known as the "Manly report." This report ascribed industrial unrest to the unequal distribution of wealth, to unemployment, to the difficulty of securing justice in the passage, enforcement and adjudication of labor laws, and to the denial of the right to organize. The chief remedies advocated in the Manly report were an inheritance tax, confiscating all fortunes in excess of $1,000,000, exemption of land improvements from taxation, depriving the courts of the power to declare laws unconstitutional, and prosecution by the Federal Trade Commission of all cases of unfair treatment of labor. The majority report, written by Prof. John R. Commons and signed by him, by Mrs. J. Borden Harriman and in large part by the three employer members of the Commission, emphasized the necessity of working out a method for the enforcement of existing labor laws before placing new laws on the statute books. This method was said to be found in the administration of all state or Federal labor laws through industrial commissions advised by councils representing both employers and employees. A supplementary report by the three employer members of the Commission emphasized the wrongs committed by the unions. All three reports agreed in acknowledging the necessity for labor organization. (See also XXVIII, *Public Health and Hygiene.*)

Department of Labor.—A new departure of the Federal Department of Labor during the year was the starting of a *Monthly Review.* The *Review* is made up of accounts of investigations too small to warrant publication in the regular series of bulletins, reviews of the work of various labor departments and of foreign and American official reports, and such news items of labor as are brought officially to the attention of the Department.

Minimum Wage.—The first official reports on the operation of American

minimum-wage legislation appeared in 1915. These were the studies of the Massachusetts Minimum Wage Commission on the effect of the minimum wage in the Massachusetts brush industry, and the report of the Federal Bureau of Labor Statistics on the effect of the legal minimum wage in Oregon department stores. Both reports came to favorable conclusions as to the possibility of raising wages without reducing the amount of employment or the prosperity of the industry.

Reports of commissions investigating the need for minimum-wage legislation were issued by the Ohio Industrial Commission and the New York State Factory Investigating Commission. The Ohio Commission studied the cost of living of selected wage-earning women who kept detailed budgets of their expenditures. The New York Commission concluded its work by the publication of a five-volume report dealing with various aspects of minimum-wage legislation, the cost of living and with the wages of 109,000 workers in mercantile establishments and in shirt, paper-box, button and confectionery factories.

Industrial Hygiene.—An exhaustive report on the health of New York City garment workers was published by the U. S. Public Health Service. As a result of the examination of 2,000 men and 1,000 women workers, the report states that the most prevalent physical defects are tuberculosis and faulty postures. As remedies it recommends "open-air" shops and wet sweeping for the one and adjustable seats for the other. Another study of special interest issued by the Service during the year was that on miners' phthisis in Missouri. The Federal Bureau of Labor Statistics brought out a study of "Lead Poisoning in the Manufacture of Storage Batteries," finding the disease much more prevalent in this growing industry in the United States than in Europe on account of the slighter attention to factory sanitation. The Ohio State Board of Health published its comprehensive "Survey of Industrial Health Hazards and Occupational Diseases," based on a survey of over 1,000 establishments employing over 235,000 workers. The New Jersey Labor Department issued a report on the hatting industry and its occupational dangers. The New York City Health Department entered the field with a study of the fur and hatters' trade in the city.

SOCIAL INSURANCE

Workmen's Compensation.—Among the features noted in connection with the operation of workmen's-compensation laws, the one widespread form of social insurance in the United States, is a growing bitterness between the advocates of insurance by the state and the private casualty companies. The controversy became particularly acute in Ohio on account of a ruling by the state commissioner of insurance which permitted the private companies to write workmen's-compensation insurance, a privilege which they had not enjoyed since the passage of the first compensation law in 1911. The ruling was immediately contested by the State Industrial Commission which administers the law, and in November, 1915, the attorney-general was preparing to bring ouster suits against the casualty companies in the state Supreme Court. (See also XIV, *Property and Casualty Insurance.*)

A marked tendency in the administration of the laws was the inclination to broaden their scope as far as possible in order to afford more adequate protection to wage-earners. Thus, two important court decisions in New York held that in the absence of Federal legislation the state compensation law covered the employees of interstate steamships and railroads (Jensen *v.* Southern Pac. Co., 109 N. E. 600, July 13, 1915; Winfield *v.* N. Y. C. and H. R. R., Nov. 23, 1915). Other decisions concerned the inclusion of certain injuries under the laws. The Massachusetts Supreme Court sustained an award of the Industrial Board to the widow of a superintendent who was killed by a trespasser whom he ordered away because in accordance with his instructions (*In re* Reithel, 109 N. E. 951, Oct. 18, 1915). The Wisconsin Supreme Court ordered compensation paid when a worker died from typhoid contracted from drinking water supplied by the employer (Venner *v.* New Dells Lumber Co., 154 N. W.

640, Oct. 26, 1915). The death by lightning of the driver of an uncovered wagon was compensated by the Minnesota Supreme Court on the ground that his occupation exposed him to more than the ordinary hazard of such accident (State *ex rel*, People's Coal and Ice Co. *v.* District Court of Ramsey County *et al.*, 153 N. W. 119, June 4, 1915). The possibility of compensating workers for certain occupational diseases, even when the law does not cover these diseases as a whole, is illustrated by a ruling of the New York Industrial Commission. A workman was paid for disability resulting from anthrax because his form of disease can be contracted only through an abrasion of the skin. The principle here reaffirmed was that occupational diseases fall under the head of accidents when the time of the injury causing the disease can be definitely fixed. (See also IX, *Law and Jurisprudence.*)

Other Forms of Social Insurance.—Interest in other forms of social insurance continued to increase during the year, and the opinion is frequently expressed that some of the principal developments in labor legislation in the next five years will come in the field of social insurance. A legislative commission on the subject was created in California in 1915. The commission, which has an appropriation of $20,000, is authorized to investigate systems of social insurance and to make a report with recommendations to the 1917 legislature (Laws of 1915, Ch. 275). The American Association for Labor Legislation followed the publication of its "Standards for Health Insurance" in 1914 with a tentative draft of a health-insurance bill in November, 1915. This met with so favorable a reception that the Association is preparing the bill for introduction in several legislatures in 1916 and has entered on an active campaign for compulsory state health insurance. A favorable disposition toward an old-age pension system was evident in Massachusetts, when, in the November election, six cities and towns voted four to one to instruct their representatives to support such a measure. It is stated that the 1916 legislature will be asked to perfect a plan for new taxes on intangible property in order to provide an old-age pension fund. The Boston Chamber of Commerce, however, has gone on record in opposition to any extension of non-contributory pension systems. (See also *Labor Legislation, infra.*)

SAFETY, HEALTH AND COMFORT

The Organized Safety Movement.—The rapid development of the organized campaign for "safety first" is recalled by the fourth annual conference of the National Safety Council, held in Philadelphia in October. Whereas five years ago the definite safety movement was just beginning among engineers in the steel industry, at the conference the nine great industries of mining, railroads, public utilities, foundries, laundries, wood-working establishments, cement, paper and textile mills held separate meetings to discuss technical problems. In the general meetings, the question of physical examinations for workmen was emphasized. Many speakers advocated health insurance and old-age pensions to take care of those rejected in the examinations. It should not be overlooked that the spread of the safety movement parallels the development of workmen's-compensation legislation.

Occupational Disease Clinic.—The first substantial occupational disease clinic in America was opened in the spring by the New York City Department of Health. As the Department is empowered to examine persons employed in the handling of food and drink, bakers, cooks and waiters were first examined, but primarily for communicable diseases, since the trade hazard of these occupations is slight. More difficulty was experienced in finding subjects exposed to industrial diseases, but through voluntary efforts a considerable number of furriers and hatters were studied. It was next planned to examine bridge-painters and others exposed to trade risks in the service of the city and to utilize the information gained in drafting standards for city work and city contracts.

The Williamsburg Fire.—On Nov. 6, 12 persons, eight of whom were

women, were killed and 36 injured in a fire at the Brooklyn factory of the Diamond Manufactory Co. The circumstances of this accident drew attention to the imperative necessity of providing for efficient enforcement of building regulations after legislation is secured. The owner of the building was ordered to enclose the stairways with fire-resisting partitions in January, 1915. Four visits of an inspector between March and August showed that the work had not been done. In September criminal prosecution was threatened but when the fire occurred only a beginning had been made of the work. A further cause of the loss of life was probably the illegal locking of a trap door which led to the emergency exit. The coroner's jury charged the owner of the building and certain occupiers with criminal negligence and held the State Industrial Commission inefficient and guilty of neglect and the chief factory inspector unfit to hold his position.

Wages.—Marked changes in American wages may be traced to the European War. Soon after the outbreak of the war, dull business caused frequent reductions both in wage rates and in numbers. But by the summer and autumn of 1915 war orders, particularly in the iron and steel business, had often resulted in an increase of rates, sometimes to a higher level than before. The Calumet and Hecla Mining Co. reduced the rates of wage workers 10 per cent. at the beginning of the war and put them on three-quarters' time. The wages of office and salaried employees were said to have been cut 15 per cent. In midwinter full time was restored and in May the former rate of wages. In June it was announced that all men employed by the company between September and May would be paid back the amount lost through the reduction in rate though not the sums lost by short time. This unique bonus was not solicited by the men and was said to come out of profits resulting from war prices.

The principle of "equal pay for equal work" was adopted by the Illinois State Board of Administration in that it fixed the same minimum rate of pay for the same classes of work for men and women attendants in 21 state charitable institutions.

Profit Sharing.—Henry Ford, in testifying before the Federal Industrial Relations Commission, summarized the results of a year's experience with his widely known system of profit sharing (*A. Y. B.*, 1914, p. 428). The facts given showed highly favorable results following the increase in wages. While the profit-sharing plan is confined to adult employees of good moral habits, practically all those eligible have qualified. Along with a reduction in daily hours from nine to eight, productive efficiency was said to have increased between 15 and 20 per cent. The number of daily absences from work and the number of changes in the labor force were greatly reduced and Ford employees ceased to appear in the police court. It was stated that over 8,000 Ford employees had moved from undesirable to better districts and that in the first six months after profits were shared, the bank accounts of the men increased 130 per cent., the amount of life insurance carried 86 per cent., the value of houses owned 87 per cent., and the value of lots owned 86 per cent.

Hours of Labor.—The eight-hour day movement made considerable gains during the year (see also *Labor Legislation, infra*). The movement was begun among the Bridgeport munition workers (see *Trade Disputes, supra*), was taken up by the International Association of Machinists, and the reduction was conceded by most of the manufacturers of munitions through Connecticut, Massachusetts and Rhode Island. In Bridgeport both men and women employees in almost all lines of work secured the eight-hour day. The October *Monthly Review* of the Federal Bureau of Labor Statistics gives a list of 41 firms in Connecticut, Illinois, Massachusetts, New Jersey and North Carolina which have recently granted their employees the eight-hour day. In only five instances had a strike occurred. Wages had in no case been lowered and in some instances had been increased. The directors of the Standard Oil Company voted in September to grant its 17,000 employees the eight-hour day without reduction in pay. Still another eight-hour day

movement was started by the five principal railroad brotherhoods, the Locomotive Engineers, Locomotive Firemen, Railroad Trainmen, Railroad Conductors and Railroad Telegraphers. On the expiration of their existing contracts with the railroads, they prepared to ask for an eight-hour in place of a ten-hour day, with extra pay for overtime.

The New York Interborough Rapid Transit Co. reduced the daily hours of over 2,000 elevated and subway employees from 12 to 10 without change of wages. The men benefited include the station agents, ticket sellers, gatemen and station porters.

For perhaps the first time in America provision for annual vacations was made in an American trade agreement. The Chicago Milk Drivers' Union secured an agreement which included two weeks' vacation with pay annually for every driver employed when the agreement was signed.

COST OF LIVING

The *New York Times Annalist* index number provides a serviceable indication of the cost of living for industrial workers. It shows the fluctuations in the wholesale price of "25 food commodities selected and arranged to represent a typical family's food budget" and therefore covering about 40 per cent. of the workingman's whole cost of living. According to this method of measurement, the cost of living was extremely high in 1915, and it is probable that this may be attributed to the European War. From 1896, when the index number stood at 80, till 1912, when it reached 143, there was an almost continuous rise. In 1913, however, a slight decline to 139 was registered. The lower level continued in the first half of 1914, but with the outbreak of the European War food prices rose sharply and the average for the year was the new high record of 145. The high prices continued during 1915, but with the usual decline in the summer and early fall as the new crops were harvested instead of the abnormal rise of 1914. The index number during the twelve months of 1915 stood as follows:

January	151	July	147
February ...	156	August	143
March	153	September ..	137
April	153	October	141
May	153	November ...	144
June	147	December	149

One widely noted feature of the fluctuations in the cost of living was the rise of bread prices in January. Many bakers then began to charge six and twelve cents for loaves formerly five and ten cents. The cause was said to be the increased cost of flour on account of heavy exports to the warring nations. In New York much adverse criticism of the change was expressed and the state began an investigation to find out if there was criminal collusion between the bakers. In March, however, the price was reduced to the old level, because, it was stated, the bakers who raised prices had lost many customers.

LABOR LEGISLATION

IRENE OSGOOD ANDREWS

Accident and Disease Reporting.—The reporting of industrial accidents was required in 1915 by eight of the ten new states enacting accident-compensation laws, while four additional states amended existing acts. In California, attending physicians and surgeons, as well as employers, under a penalty of $10-$100 for each offence, must report accidents (Ch. 617, Sec. 23). Accidents must be reported to the commissions within ten days in Colorado (Ch. 179), within a week in Indiana (Ch. 10), "promptly" in Maine (Ch. 295, Sec. 41), within ten days or a "reasonable" time in Oklahoma (Ch. 246), within five days, and in addition by telegraph or telephone when loss of life or limb occurs, in Oregon (Ch. 76), within three days in Vermont (No. 164), and within 20 days in Wyoming (Ch. 124). In Rhode Island, injuries resulting in death must be reported within 48 hours and within a week if they are non-fatal and produce incapacity of two weeks (Ch. 1268). Supplemental reports, usually after 60 days or at the termination of disability are also required in Con-

necticut (Ch. 288), Indiana and Vermont. In Montana, accidents are to be reported under rules and regulations made by the Industrial Accident Board (Ch. 96). Reports must in all cases give full particulars concerning accidents but they may not be made public nor used as evidence against an employer. In 1915 Rhode Island was the only state to require the reporting by physicians of certain industrial diseases, such as compressed-air illness and anthrax, and those due to industrial poisoning such as brass, lead, phosphorus, arsenic and wood alcohol (Ch. 1226).

Administration of Labor Laws.—The acts of 1915 show a marked tendency toward the concentration of the administration of all labor laws in one office. From Connecticut and New Jersey, where the bureaus of industrial statistics and of factory inspection were merged (Ch. 255, Conn.; Ch. 351, N. J.), to Colorado, Indiana, Montana, New York and Nevada, where the administration of workmen's-compensation laws also was united with the work of factory inspection, the tendency is almost universally toward concentration.

The Wisconsin plan (*A. Y. B.*, 1911, p. 364) of an industrial commission to administer both factory laws and workmen's-compensation laws, with broad power to make rules and regulations respecting the safety and sanitation of work places, was adopted with varying changes in Indiana, New York, Colorado and Montana. The New York act differs from that of Wisconsin chiefly in the requirements of an advisory representative council, the appointment of practically all assistants and employees from civil-service eligible lists and the narrower powers of the commission to make rules without disturbing standards already prescribed in the statutes (Ch. 674, 710). The Colorado commission is peculiar in that, instead of replacing or merging all other bureaus and officers charged with the enforcement of labor laws, it is merely superimposed upon them and its duties are chiefly those of investigation, supervision and rule-making. The commission is not given the same clear-cut powers of administration and enforcement as are conferred upon the Wisconsin commission, and while it has much the same power to make general and special orders fixing standards of safety, etc., it is more dependent upon other state or local officers for the enforcement of rules. Then, too, none of the detailed labor laws of the state has been repealed and the act does not seem to contemplate their replacement by orders of the commission to the same extent as has been done in Wisconsin (Ch. 180; see also "Trade Unions and Trade Disputes," *infra*). The administration of the workmen's-compensation laws and the health and safety laws for factories by one commission was provided for also in Indiana (Ch. 106), Montana (Ch. 96) and Nevada (Ch. 203). The advantages of this merger are many, but perhaps the most persuasive is the fact that prevention of accidents goes hand in hand with the determination of the right to and the amount of compensation therefor.

The idea of emphasizing non-partisanship in the administration of labor laws by establishing an advisory council equally representative of employers and employees was recognized in several states during the year. The New York industrial-commission law requires the submission of all matters of policy, including the appointment of assistants to positions requiring peculiar knowledge and training, to an advisory council consisting of five employers and five trade unionists with a neutral chairman. In the laws of Illinois, New Jersey and Pennsylvania establishing public employment agencies, provision for representative advisory boards was also made (see "Unemployment," *infra*). Of the new duties assigned to labor-department officials one of the most interesting was that of rendering assistance to employees to protect them against fraud and extortion, a service analogous to the assistance rendered by public-utility commissions to secure redress of wrongs practiced on individual shippers. Such assistance has been rendered for several years by the New York Department of Labor to alien employees, but the new Industrial Commission in that state is required to extend this service to all employees.

Authority to deal summarily with violations was given to officials entrusted with the enforcement of labor laws in several states: Missouri directed the mine inspector to close any mine where poisonous damps exist; California declared that labor camps which do not conform to the requirements of the act regulating such camps are public nuisances which may be abated by the court on the application of the Commission of Immigration and Housing. The most important act of this kind, however, was that regulating canneries in Delaware (see also *Factories and Workshops, infra*). This law authorized the cannery inspector to close any factory which violates the act and to cause all work therein to be discontinued until needed changes are made. It is provided further that in case of a third conviction under the act the court may direct the closing of the factory and prohibit the person convicted from further engaging in the cannery business until permitted to do so by the court (Ch. 228). In Delaware, the former Child Labor Commission was abolished and an unsalaried Labor Commission to enforce the female- and child-labor laws was created, consisting of five members appointed by the governor (Ch. 66). Among the devices to prevent hardship in the application of laws limiting hours or periods of work to particular industries or in particular circumstances, an Arkansas law is interesting. It permits the exemption of canning and candy factories from the limited hours on the order of a commission composed of the commissioner of labor and two women, one appointed by the governor and one by the commissioner. This commission administers also the minimum-wage and woman's-work laws (Ch. 191). A minimum-wage commission, consisting of three unsalaried members, one to be a woman, was also created in Kansas (Ch. 275) with an appropriation of $5,000. The powers of this commission are similar to those of Oregon and Massachusetts (*A. Y. B.*, 1913, p. 436). Many acts dealing primarily with substantive labor laws contain incidentally provisions with respect to their enforcement, and in several states slight amendments to existing laws were made and salaries of administrative officials increased.

Child Labor.—Over one-half of the states in which legislation was passed during the year took action on child labor. A large part of each measure deals with administration, perhaps the most difficult problem in the protection of working children. Pennsylvania enacted a comprehensive law, including the prohibition of work of any kind for children under 14, limiting hours for those under 16 to nine a day and 55 a week, and prohibiting employment between 8 p. m. and 6 a. m. California entirely rewrote its act and prohibited minors under 18 from working more than eight hours a day or 48 a week, or before 5 a. m. or after 10 p. m. (Ch. 625). Both of these states gave to their industrial commissions power to extend the list of dangerous or unhealthful employments prohibited to children under 18, in the case of Pennsylvania, and under 16 in the case of California, the latter state providing for a court appeal. In addition Pennsylvania provided that no person between 14 and 16 may be employed unless during such employment he attends, for a period equivalent to not less than eight hours each week, a school within reasonable access to the place of employment and approved by the state superintendent of public instruction. The school hours must not be on Saturday nor before 8 a. m. or after 5 p. m. and in computing the maximum number of hours, the time spent in school is considered as part of the working day or working week. Within four days the employer must notify the officer who issued the employment certificate of the hours and of the name and location of the school (Ch. 177).

In Wisconsin, when an industrial, continuation or commercial school is established according to the law in a town, village or city, every employed minor between 16 and 17 residing therein must attend such school in the day time not less than five hours a week for six months a year or four hours a week for eight months, as determined by the local board of industrial education. The employer must allow such employees a reduction in hours of work of not less than

the number of hours the employee is required to attend school. When working time and class time coincide, the reduction in hours must be allowed at the time of the holding of classes which the employee is, by law, required to attend. A similar provision of the old law in regard to children between 14 and 16 is amended so as to require attendance in the day time not less than five hours a week for eight months (previously six) or four hours a week for ten months (previously eight) as may be determined by the local board of industrial education (Ch. 420).

Alabama for the first time enacted a detailed law which provided that after Sept. 1, 1915, no child under 13, and after Sept. 1, 1916, no child under 14, may be employed or permitted to work, in any gainful occupation except agriculture and domestic service; but boys of 12 and over may be employed in business offices and mercantile establishments in cities and towns under 25,000 while the public schools are not in session. No child under 16 may be employed or permitted to work in any gainful occupation except agriculture or domestic service more than six days in a week, 60 hours in a week, 11 hours in a day, nor before 6 a. m. or after 6 p. m. No person under 18 in any city of over 25,000 may be employed or permitted to work as messenger in the telegraph, telephone or messenger service in the distribution, transmission or delivery of goods or messages after 9 p. m. or before 5 a. m., and in cities or towns under 25,000 after 10 p. m. or before 5 a. m. No child under 21 may be employed in establishments where intoxicating liquors are manufactured or sold, and no child under 16 may be employed or permitted to work in operating or assisting to operate any of a long list of dangerous machines. Detailed provision for enforcement is also made (No. 169). Maine prohibited work in factories or mercantile establishments for children under 14 and required employment certificates for children between 14 and 16 (Ch. 327), while Wyoming enacted a law prohibiting the employment of children under 14 in a long list of employments, or in any occupation for more than nine hours a day or 56 hours a week. Rhode Island prohibited boys under 12 and girls under 16 in cities of 70,000 from engaging in street trades and provided for the administration of the act, and Iowa enacted a similar law for boys under 11 and girls under 18 and prohibited the employment of children under 16 for more than eight hours a day and 48 a week. Iowa also greatly strengthened its requirements for the granting of employment certificates. The general trend of the legislation in the other states is to raise the minimum wages for any employment, to reduce hours, to prohibit night work and to strengthen the requirements for the issuance of employment certificates.

Factories and Workshops.—Illinois required manufacturing processes generating noxious fumes or dust to be carried on in rooms above the surface of the ground, and any injury to the health of an employee caused by a wilful violation of the act gives a right of action for damages not to exceed $25,000 (p. 431). Missouri provided for health and safety in foundries employing ten or more men by regulating the construction of gangways and water tanks, and by requiring the removal of poisonous gases, fumes, etc. Connecticut required emergency accident kits, while Massachusetts gave the Board of Labor and Industries power to require accommodation for employees injured or taken ill on premises, where 100 or more are employed (Ch. 216). New Hampshire amended its fire escape law, and New York its laws relating to the prevention of and protection against fire; New York also transferred the enforcement of the law from the fire marshal to the Industrial Commission (Chs. 347, 719).

Probably the most elaborate law ever enacted for the protection of the public and of employees in the canning industry was passed in Delaware during the year (Ch. 228). Among the chief provisions of the law are the requirement of smooth watertight floors, wash and dressing rooms equipped with water, soap and sanitary towels, separate toilet rooms, adequate drainage and the removal of all waste matter. Living quarters must have waterproof roofs and tight

board floors with ample light, ventilation and provision for the separation and privacy of the sexes, and occupants must keep their quarters clean. Employees are forbidden to smoke or spit in workrooms and the women must wear clean aprons or wash dresses and caps; employees with any infected wounds may not handle food or food containers, and clean cuts must be covered with rubber cots. An inspector was authorized to enforce the law and was given authority, in case of violation, to close the factory or have work discontinued until compliance is secured (see also "Administration of Labor Laws," *supra.*) California gave to the Railroad Commission power to require public utilities to furnish safety equipment and proper facilities for their employees (Ch. 91). Detailed provisions were enacted in California (Ch. 329) for the sanitation of labor camps, and the commissioner of labor in Pennsylvania was directed to investigate conditions in labor camps in his state, while Indiana rewrote its boiler construction and inspection law, elaborating details and strengthening enforcement (Ch. 111). Other subjects covered during the year are prohibition of the use of laundries in Delaware and of grocery stores in New York as sleeping quarters, and the requirement of pure drinking water in all "industrial" establishments instead of only in "manufacturing" establishments in Massachusetts. Tennessee created the office of fire-prevention commissioner (Ch. 131).

The commissions to administer both the workmen's-compensation laws and the factory acts which were created in Colorado (Ch. 180) and Montana (see "Administration of Labor Laws," *supra*) were given power to require employers to furnish safe places of employment in accordance with rules and regulations formulated by joint committees of employers and employees along lines similar to the plan adopted in Wisconsin in 1911. Texas enacted a fire-escape law for buildings over two stories in height where five or more persons are assembled (Ch. 12) and Iowa rewrote and greatly extended its fire-escape law, specifying in detail the number and character of escapes for different classes of buildings. Michigan provided for the sanitation of railroad cars used as living quarters of employees engaged on construction work, and requires sufficient heat, light and ventilation and a separate place with facilities for drying clothes (Ch. 3). In California (Ch. 667) and Oregon (Ch. 329) all employers who collect charges for hospital services must report receipts and expenditures, and employers in California must post in a conspicuous place a copy of the report. In Ohio the legislature appropriated $10,000 for the safety work of the Industrial Commission but $5,000 is not available until the manufacturers of Ohio have deposited with the commission $5,000 for the same work (p. 666).

Congress provided that no part of the appropriations made in the Navy Appropriation Act is available for the pay of any person having charge of the work of any employee of the United States Government while making with a stop watch or other time-measuring device a time study of any job of such employee or available to pay any bonus to an employee except for suggestions resulting in improvements or economy in the operation of the plant. The same provision was incorporated in the Army Appropriation Act.

Hours of Labor.—An eight-hour day for laborers on work for public-utility districts was established in California (Ch. 531, Sec. 50), and in Oregon state institutions and departments were exempted from the eight-hour day for employees on public works (Ch. 165). Hawaii granted two weeks' vacation to employees of the territory who have been employed continuously for one year in the same department (Ch. 199). In Massachusetts the Economy and Efficiency Commission was directed to study the question of hours of public employees and Saturday half-holidays and to report early in 1916 (R. C. 137). At the next municipal election, the cities of Lowell, Taunton, Attleboro and Revere are to vote upon giving members of the fire department one day of rest out of every five without deductions in pay. The voters of the state have approved the act of 1914 granting Saturday half-holidays to laborers permanently employed by the state. Members of

fire departments in Buffalo, N. Y., are given leave of absence for five days per month and two nights of 12 hours each, while in Michigan they are given one day off duty in every four, and an annual furlough of 20 days.

As to private employment, mercantile and commercial houses in Utah in cities of over 10,000 are required to close at 6 p. m. (Ch. 23). In North Carolina an 11-hour day and a 60-hour week for factories was established but a large number of male employees were exempted (Ch. 148). In New York an 11-hour day and a 70-hour week was established for employees in grocery stores in first-class cities, the list of employments in the mining industry in Alaska having an eight-hour day was greatly extended (Ch. 6), and train dispatchers in Massachusetts were included in the nine-hour day law for street and elevated railway employees (Ch. 277). Alaska also submits to the voters the question of an eight-hour day for all wage-earners and salary-earners in the territory (Ch. 58). New York amends the one-day-rest-in-seven law so as to allow the Industrial Commission to make variations applying to all similar conditions (Ch. 648). Two other amendments to this law, one removing the discretionary power of the commissioner of labor in exempting continuous industries running eight-hour shifts (Ch. 321), and the other exempting creameries, dairies, etc. (Ch. 357), were declared by the attorney-general to be superseded by the later Chapter 648.

Immigration and Aliens.—The employment of alien labor has been a prominent problem in several states during the year. The New York law forbidding the employment of aliens on public works was amended to give only preference to citizens (Ch. 51) although later in the year the earlier act was sustained by the U. S. Supreme Court. The initiated law of Arizona (in effect December, 1914) provided that all employers of more than five persons should employ not less than 80 per cent. of native-born citizens, but this act was declared unconstitutional by the U. S. Supreme Court (see IX, *Law and Jurisprudence*). Idaho requested Congress to require the employment of citizens on its public works (S. J. M. 6), while Pennsylvania required the commissioner of labor to maintain minimum standards of sanitation in labor camps and to coöperate with the educational authorities in the welfare of aliens (No. 397, Secs. 19, 20).

Mines.—Legislation providing for the health and safety of mine employees was enacted in more than a dozen states, including Colorado, Idaho, Kansas, Missouri, Nevada, New Mexico, Pennsylvania, Tennessee and Texas. Provisions relate mainly to safety of shafts, ladderways and outlets, first aid to the injured, sprinkling facilities, use of explosives, dressing rooms, wash-houses and lockers, ventilation, lighting, and also to facilities for hoisting men and materials. Alaska enacted an elaborate mine-safety law (Ch. 69), while West Virginia entirely rewrote its law regulating conditions in mines (Ch. 10).

In Pennsylvania mine owners are allowed to employ unlicensed mine foremen, and all foremen and firebosses are made agents of the owner, thereby making the owner responsible to third persons for their acts (No. 329). In Indiana a commission was created to codify and recommend amendments to the mining law.

Pension and Retirement Systems.—Many states enacted laws and amendments affecting pensions for policemen and firemen, while commissions for the investigation of pensions for public service were provided for in Massachusetts and in Illinois. In Pennsylvania systems of compulsory pension funds for public employees supported by contributions of the public and of employees must be established by cities of the first class and by certain counties; pensions are to be paid for both old age and total and permanent disability. Pennsylvania also gives straight pensions to its state employees who are 70 years old and have served continuously for 25 years if they are permanently incapacitated to perform their duties (No. 423). A voluntary system of pensions for old age and disability is provided for employees of water boards in New Jersey, while Massachusetts made a few changes in the municipal employees' pension laws.

While pension systems for public

employees have been frequently adopted by the various cities or states, Arizona and Alaska have led the movement in America by granting general old-age pensions. In Alaska any pioneer, regardless of sex, who has attained the age of 65 years and has resided in Alaska for ten consecutive years or more, and is entitled to the benefits of one of the homes for indigent pioneers may, if he has not become an inmate in any one of these homes, be pensioned. The allowance in no case shall exceed $12.50 per month, the exact amount being left to the discretion of the investigating board. The amount, after being granted, shall never be diminished, but may from time to time be increased up to the maximum and may be revoked if the pensioner can support himself or his relations can support him. The pension may be paid to a public officer or a trustworthy person to be spent in support of the pensioner if the board or a commissioner finds that it is wasted (Ch. 64). In Arizona old-age pensions are provided for men and women 60 years of age who are citizens of the United States, residents of Arizona for five years at the last preceding election, and without visible means of support. The pension is $15 a month as long as the pensioner lives within the state. All almshouses in the state are to be sold and the proceeds devoted to the purposes of this act and a sufficient amount from the general fund in the state treasury is appropriated to carry out the act. Mother's pensions are also included (initiated act, in effect Dec. 14, 1914). The Arizona act has been held unconstitutional and is on appeal before the State Supreme Court.

Railroads and Streetcars.—Very few new features were introduced in railroad-safety legislation during the year. Most of the acts consist of amendments on such subjects as safety devices on locomotives, sign boards at derailing switches, first-aid packages on trains, enclosed vestibules on street-railway cars, headlights on locomotives, block signals to warn crew that they are approaching a tunnel, overhead crossings above tracks and the crossing of wires over tracks, lights on switches, injury to or interference with safety devices, the prohibition of the attachment of cars to the front of locomotives and prohibition of the receipt or transmission of orders by telegraph or telephone by train crews. Oklahoma required railroads collecting fees from employees for hospital service for sick or injured employees to provide hospital facilities and report the condition of the fund (Ch. 30), while California and Nevada amended their full-crew laws in minor respects.

Trade Unions and Trade Disputes.—The most important acts in this field are the provisions for conciliation, arbitration or compulsory investigation of labor disputes in Colorado, Indiana and Michigan. The Colorado act authorizes the Industrial Commission to conciliate or secure arbitration and, in the event of failure, to investigate industrial disputes. Pending arbitration or investigation, strikes or lockouts are forbidden under penalty of severe punishment (Ch. 80, Secs. 27-33). The Indiana act (Ch. 118) provides for the organization of a mediation board to deal with each controversy but otherwise is much like the Michigan act which creates a board of mediation and conciliation consisting of a permanent commissioner and one other person to give such time as the work of the board requires. The Michigan act also provides for hearing the employees and for the approval of the court before reduction of wages or other change in conditions of employment in any business in charge of a receiver (No. 230). Trade-union labels are protected in California and Missouri, and in Washington any person who, to call attention to a dispute between a trade union or any of its members and a person engaged in a lawful business or his employee, or to hinder such person in the conduct of his business or to prevent his employing or keeping in his employ any person, stands, or "continuously moves back and forth" on a street or on any public or private property within 500 feet of his place of business or home, or who carries on any street or public property any "banner, sign or transparency" or causes any one else to do any of these acts, is guilty of picketing (Ch. 181). Congress con-

tinued the prohibition against the use of funds appropriated for the enforcement of the anti-trust laws for the prosecution of labor unions for acts not in themselves illegal.

Unemployment.—The seriousness of the evil of unemployment was recognized by many state legislatures during the year. Commissions to study the subject were provided for in four states, Illinois, New Jersey, Pennsylvania and Colorado. Public work as an emergency relief, practically a new and significant feature in American legislation, was provided for by four states, an Idaho act (Ch. 27) being the most far reaching. This act requires county commissions to provide emergency employment to United States citizens resident for six months in Idaho. Compensation for such work is to be fixed by the commissioners and 50 per cent. thereof is to be deducted from state taxes for that county. No person may have more than 60 days of such employment during one fiscal year and refusal or neglect of work is punishable for the first offense by one week's suspension and for the second offense by disqualification for one year from the benefit of emergency employment. In Massachusetts the state forester was required to provide employment through the improvement and protection of the forests and other public work, preference being given to residents of the state and to needy persons. Appropriations of $25,000 and later an additional $50,000 were made, while a third resolve authorized the acceptance of contributions from individuals or municipalities. In New Jersey relief committees in municipalities were authorized to provide work for the "needy poor," the roster for payment to be approved by the state Civil Service Commission. The state Board of Control in Oregon was requested to have state work done at such times as will relieve unemployment at all seasons of the year.

Free public employment bureaus were authorized for the first time in Idaho, Iowa, New Jersey and Pennsylvania. The Pennsylvania act is very comprehensive, and in addition to the usual administrative provisions, authorizes the establishment of offices under the Department of Labor and Industry, provides for the creation of municipal bureaus in coöperation with cities, requires representative councils of employers and employees for each office and directs the officials to coöperate in the movement for vocational training schools (No. 373). Idaho declared the establishment of employment bureaus "a function of government," forbade maintenance of private agencies for profit except certain charitable and professional ones, and required bureaus to be established in all cities and towns of 5,000 or more (Ch. 169). A bureau for farm labor was also created (Ch. 71). Illinois reorganized her public employment bureaus, creating one central office with branches and providing for state and local representative councils of employers and employees (p. 414). Measures providing for the licensing and regulation of private agencies were enacted in Nebraska, Oregon, Pennsylvania and Texas, and amendments to similar regulatory acts were enacted in California and Wisconsin. Characteristic provisions for the regulation of these agencies are: the prohibition of their conduct in improper places; the requirement that undesirable persons be excluded from premises where the agency is conducted; the requirement that women and minors shall not be sent to places of bad repute; the prohibition of registration fees; the requirement that fees be returned if positions are not obtained through no fault of the applicant and the prohibition of misrepresentation inducing employees to change their employment. (See also XV, *Unemployment.*)

Wages.—The wages of any employee quitting service in Indiana must be paid within 72 hours, and in both Indiana and South Carolina the employer is liable for each day's delay in a sum equal to the employee's daily wage, in South Carolina for 30 days. (Ch. 51, Ind.; Ch. 112, S. C.) The California law provides that if an employer fails to pay wages within five days after they are due wages shall continue for not more than 30 days thereafter. Any employee who wilfully avoids payment is not entitled to benefits during that time. Unpaid wages of striking employees are due on the next

pay day. The penalty for a violation under the old act was not more than $500 and often resulted in imprisonment for debt, but this was declared unconstitutional by the Supreme Court of the state. Violation was in 1915 made a misdemeanor (Ch. 143). Semi-monthly payments of wages of railway corporations were required in Iowa (S. F. 105), by all corporations, except state or municipal, in Kansas (Ch. 165), by public-service corporations in Minnesota (Ch. 29), of wages of shopmen by railroads in North Carolina (Ch. 92), and by a number of specified corporations and all other corporations employing over ten persons and contractors on public works in Texas (Ch. 25), with a penalty in all cases except Minnesota. Wisconsin recast her semi-monthly pay-day law (Ch. 114). Redemption of store orders in money was required of all employers in Florida (Ch. 6914), in South Carolina the time for redemption was reduced (Ch. 44), and in North Carolina railroad shopmen must be paid in money or in orders redeemable in money (Ch. 92). In South Carolina any one who acquires a trade check for less than par value is guilty of a misdemeanor and cannot enforce payment of the check (Ch. 126). The law regulating the screening and weighing of coal as a basis for wages was made more definite for certain districts in Arkansas (Ch. 49). Both husband and wife must agree to a transfer of wages of the head of a family in Nebraska (Ch. 171), and in Georgia the amount of wages due a deceased employee which may be paid without administration to his widow or orphans was increased (No. 141).

California required semi-monthly payment of wages in cash or check payable in money for all public employees and all employees of private employers employing six or more, except those occupied in farming and domestic service, and provided a penalty for refusal to pay wages due or for falsely denying their amount or validity (Ch. 657). Pennsylvania in several separate acts also required semi-monthly payments for employees of the state, of cities of the first class and of certain counties. More than a dozen states enacted legislation on the subject of mechanics' liens. These include Alabama, where timber products were brought under the law; Maine, municipal buildings; New Jersey, docks; and Indiana, the funds of the new drainage and flood-prevention districts.

Workmen's Compensation.—Two new states, Alabama and Utah, established legislative commissions in 1915 to investigate and report on systems of employers' liability and workmen's compensation, making a total of twenty-seven legislative commissions on this subject created since the workmen's-compensation movement began in this country in 1909. Minnesota and North Dakota passed substantially similar liability laws for railroad employees, establishing the rule of "comparative negligence" and abolishing the defense of assumption of risk in cases where the employer's violation of a safety statute contributes to the injury. Pennsylvania amended its mining laws so as to make owners responsible for acts of mine foremen, and Illinois gave a right of action for injury to health caused by violation of the act as to manufacturing processes creating noxious fumes or dust.

The number of workmen's-compensation laws has, during the year, increased by ten, raising the number of states and territories with such laws from 23 to 33. Laws were enacted in 1915 in Alaska (Ch. 71), Colorado (No. 179), Hawaii (No. 221), Indiana (Ch. 106), Maine (Ch. 295), Montana (Ch. 96), Oklahoma (Ch. 246), Pennsylvania (Nos. 338, 339, 340, 343), Vermont (No. 164) and Wyoming (Ch. 124). The states still without such legislation are mostly southern states, and only one of them, Missouri, is largely industrial. (See also XIV, *Property and Casualty Insurance.*)

The legislation of 1915 was, on the whole, a duplication of existing laws and provisions. One of the acts, that of Wyoming, is a straight insurance measure, all indemnities being payable out of a state fund made up by assessments imposed upon employers, and an additional 25 per cent. (not, however, to exceed $40,000) contributed by the state. State insurance funds were created in Colorado, Montana and Pennsylvania. Only three

of the new acts are compulsory for industrial workers, those of Hawaii, Oklahoma, and Wyoming. Voluntary benefit schemes as a substitute for the statutory provisions are permitted in Indiana, Oklahoma and Maine, upon the usual condition that the benefits do not fall below the scale fixed by the law. Alaska confines its compensation law to the mining industry, and Montana, Oklahoma and Wyoming enumerate certain extra-hazardous occupations to which the law is to apply. Practically all of the new laws are administered through commissions, the only exceptions being those of Alaska and Wyoming, which rely exclusively on court hearings; but an unrestricted appeal to a court is allowed in Colorado, Hawaii and Montana.

Medical aid is provided for in all jurisdictions except Alaska and Wyoming, and the waiting period is from ten days in Wyoming to three weeks in Colorado. In the case of permanent total disability the compensation continues until death only in Colorado and Montana, but in Montana the rate is reduced after 400 weeks from $10 to $5. Colorado is the only state which allows compensation until death in case of partial disability. Usually the compensation stops after a period of 500 weeks or 100 months. The disability rates are, as a rule, 50 per cent. of the wages earned at the time of the injury, but Indiana makes the rate 55 per cent. and Hawaii 60 per cent. Maximum compensation in Alaska is fixed at $6,000, this being the largest compensation payable under any of the existing compensation laws. This high rate in Alaska should be contrasted with the failure to provide for medical relief. Provision that in fixing compensation for total disability to a minor, consideration be given to the expectation of a normal increase in earning power with the attainment of maturity, is found in Colorado and Oklahoma.

A number of the laws of previous years were amended in various respects, and it is of interest to note the changes recommended by the California commission, which with one exception were adopted by the legislature (Ch. 607). The principal accepted recommendations were: (1) That in defining injuries no reference should be made to "accident," thus allowing compensation for loss due to disease contracted directly in consequence of the employment; the commission states that about two per cent. of the cases will be benefited by this amendment; (2) that if necessary the provision for medical relief shall include the purchase of artificial limbs; (3) that the period of medical care (maximum limit now 90 days) shall be permitted to be extended; (4) that the usual period of six months' limitation for the making of claims shall not apply where more serious consequences from the accident develop subsequently to that time; (5) that in awarding compensation to a minor for permanent total disability regard be had to the expectation of a normal increase in compensation upon attaining a higher age; a similar provision is now made in Massachusetts; (6) that the commission have full jurisdiction over all medical bills and over attorney fees; (7) that claims shall not be settled without the approval of the commission; (8) that the cost of the premium shall not be collected from the employee; (9) that in hearings by the commission the admission of hearsay evidence shall not be regarded as reversible error.

New York amended the compensation act of 1914 by allowing direct payments (by the original act payments could be made only through the commission), and permits agreements subject to the approval of the commission; if the agreement is found to be unfair to the employee the commission may add 10 per cent. to the award by way of penalty. This state also enacted express provision whereby advance payments may be credited upon the amount ultimately allowed, and provides particularly that in case of a second or subsequent injury superadding one disability to another, the previous disability is not to be taken into account. (Chs. 167, 168).

Woman's Work.—To the nine states which already had minimum-wage laws (*A. Y. B.*, 1913, p. 435) Arkansas and Kansas were added in 1915. The Arkansas act establishes a minimum wage of from $1.00 to

$1.25 per day for normal experienced women workers in a list of employments engaging more than three workers, and gives to a commission power to raise or lower the minimum for particular occupations and to prohibit piece work if found to be injurious to the health of employees (Ch. 191). In Kansas the act creates a commission to establish through the medium of wage boards standards of wages, hours and conditions of labor for women and minors (Ch. 275), while similar powers are granted to the existing commission in Washington in relation to the telephone industry in rural communities and cities of less than 3,000. In Idaho a commission was created to report by January, 1917, on the advisability of establishing a minimum-wage board for women and minors (Ch. 136).

The nine-hour day and 54-hour week were established in Arkansas (Ch. 191), Maine (Ch. 350), Oklahoma (Ch. 148) and Texas (Ch. 56), while Wyoming (Ch. 45) established a ten-hour day and 56-hour week, and Tennessee provided for a weekly limit of 57 hours and extended the law to all establishments where labor is employed or machinery used (Ch. 144). Certain exceptions are made, as in the case of public-service employments and in the canning industries, where the irregular nature of the work has given rise to many perplexing problems. In the canning industry there is a tendency toward entire exemption, as in Maine and Tennessee (Ch. 172), or toward allowing an extension of working time during the busiest part of the season, as in Arkansas, where overtime may be allowed for not more than 90 days but such overtime must be paid for at the rate of time and one-half. In Oklahoma employees working overtime in the telephone service, and in hotels and restaurants (limited to one hour), must be given double pay. The same rate must be given in Texas for the one hour a day permitted above the legal nine-hour day in the cotton and woolen industry, and for the two hours a day (but not over 54 a week) permitted above the legal nine hours in laundries. In Nebraska females may now be employed at night by public-service corporations (Ch. 71), and in New Hampshire the provision limiting hours to 48 a week where women are employed more than one night a week is amended to permit employment for two nights and to exempt mercantile establishments for seven days before Christmas (Ch. 164). Seats for females were required in Oklahoma, Texas and Vermont. Several minor amendments were also made in Massachusetts (Ch. 57), in Michigan (Ch. 255), in New York (Ch. 386), in Oregon (Ch. 36), in Pennsylvania (Ch. 327), and in Rhode Island (Ch. 1218).

Miscellaneous.—Several measures were passed during the year to protect employees in maintaining their positions. Among these California (Ch. 65) and Nevada (Ch. 41) prohibit the discharge of the employees on the report of a "spotter" without a hearing; Iowa makes it a misdemeanor for any person to report to an employer falsely and without reasonable cause that his employee has not accounted for money received or not collected money he should have collected (S. F. 429). California (Ch. 56) and Nevada (Ch. 51) penalize the taking of gratuities from employees by their superiors. Indiana obliges an employer to give a "service letter" to employees (Ch. 51) and Arizona, through an initiated measure, defines a blacklist as any understanding or agreement whereby the names of certain persons or their descriptions or other means of identification shall be "spoken, written, printed or implied," for the purpose of being communicated or transmitted between employers of labor or their agents to prevent laborers from engaging in a useful occupation. The law declares it a felony to ask for certain identifying information from an applicant for work or to discharge a man because of a blacklist or membership in any organization. An important measure, secured after many years of effort, is the Federal Seamen's Act (Ch. 153, 63rd Cong., 3d sess.). This law abolishes arrest and imprisonment as a penalty for desertion and also regulates hours of labor, payment of wages, quarters, number and qualifications of seamen (see also I, *American History*, and XX, *The Merchant Marine*).

XVII. AGRICULTURE, HORTICULTURE, FORESTRY, AND FISHERIES

AGRICULTURE

E. W. Allen

The Crop Year.[1]—In spite of a backward and unfavorable spring in many sections, the production of the staple crops was remarkably good. Rain was abundant over wide areas, and enabled good crops on the semi-arid lands. The prolonged growing season saved the corn crop in many of the northern states, where it was unusually late in maturing on account of the cold and wet spring. In October the condition of the crop in Iowa and the northern tier of states was conspicuously poor compared with other sections.

The wheat crop was estimated by the U. S. Department of Agriculture at over a billion bushels, by far the largest wheat crop ever produced in the United States. The previous record crop (1914) was 891,000,000 bus., and the five-year average 686,000,000 bus. The extraordinary crop was due mainly to the increase in spring wheat, amounting to nearly 140,000,000 bus. in excess of 1914. This is mainly accounted for by a greatly increased yield per acre, averaging for all spring wheat about 17.9 bus. as compared with 11.8 bus. in 1914. The price of wheat to producers on Oct. 1 was 90.9 cents, as compared with 93.5 cents a year before. Great differences in the quality of winter wheat arriving at market centers caused wide differences in price, there being in some instances a range of from 35 to 40 cents a bushel between the prices of the poorest and the best samples.

The corn crop greatly surpassed early expectations. It amounted to over three billion bushels, and was the second largest corn crop ever raised in the United States, being exceeded only by the record crop of 1912. It surpassed the 1914 crop by over 300,000,000 bus., and the average yield per acre exceeded the latter by about two bushels. The average October price, however, was lower than in 1914 by nearly eight cents.

The oat forecast was for a record crop of over one and a half billion bushels, the nearest approach to it being in 1912; but here again the October price was nine cents lower than at the same time the previous year. The barley forecast, 236,682,000 bus., also indicated a record crop, the previous high production being 224,000,000 bus. in 1912. Rye also surpassed all previous records, amounting to 44,000,000 bus., and the price was nearly three cents higher than in the preceding year.

The early prospects for potatoes were for the largest crop ever raised in the United States, but disease proved widespread in the principal potato sections east of the Mississippi River during the summer and fall, with the consequence that the estimates steadily declined. In October the forecast was for a crop of 368,151,000 bus., nearly 50,000,000 bus. less than in 1914 but considerably above the five-year average. The price to producers on Oct. 1 was 48.7 cents, as compared with 64.7 cents at the same date in 1914.

Hay production was apparently the highest of record, with a large increase over 1914, but it has declined in price about a dollar a ton. The tobacco crop was an unusually large one, but in some sections the quality was deficient. Such crops as buck-

[1] This discussion is based on the October estimate. The final December estimate is given in the tables at the end of this department.

wheat, flaxseed and rice equalled or exceeded those of 1914, while the acreage in sugar beets was nearly 30 per cent. more and the production ran nearly a million tons ahead of the 1914 crop. The war in Europe has reduced the sugar crop there and given a stimulus to American production. The decision of the Administration in favor of retaining the present duties on sugar imported into the United States is also favorable to its development. Arrangements were again made for securing a supply of sugar-beet seed from Germany, to meet the needs of another season.

Cotton, as was expected, showed a large decline in production, the acreage planted having been reduced 16 per cent. The total crop as estimated on Oct. 1 was 10,950,000 bales, as compared with the phenomenal production of 16,135,000 bales in 1914. It was the smallest crop since 1909. The yield per acre was considerably below the ten-year average, the unusual decline being due principally to the extremes of weather conditions and decrease in amount and quality of fertilizers used. The October price averaged 11.2 cents, as compared with 7.8 cents in 1914. Cotton seed, however, reached an unusually high price, being sold as high as $50 per ton in Alabama. New uses of the seed for war purposes, better export prices, and more extended use of cotton-seed products in the North are assigned as the reasons for the advance. (See also XIII, *Business Conditions.*)

The Cotton Situation.—The combination in 1914 of a phenomenally large production and the war in Europe, with a dull market, resulted in great hardship to cotton farmers and seriously affected business conditions in the South. It brought forcibly to light the evils attendant on the one-crop system as a basis for farming and for credit, and gave emphasis to the "feed-yourself-first" slogan started in the cotton belt, as a means of avoiding disaster. It also aroused an interest in diversified farming which all previous advice and agitation had failed to accomplish. For generations efforts have been made to induce the southern planters to produce more bread and butter and meat, and the same amount of cotton on fewer acres. The boll weevil added new force to the argument for diversification, because it was thought to foreshadow forcing it through the laws of nature, and the disaster of 1914 brought the necessity home to thousands of growers, bankers and merchants.

The inability of farmers to sell their cotton crop in the fall and winter of 1914, the fact that they had made no provision for their own food and that of their work animals, but had depended upon another year's credit, and that the banks, money lenders, merchants, and others were unable to make collections, showed the dangers and the inadequacy of the one-crop system. The matter was taken up by chambers of commerce, banks, the agricultural colleges and experiment stations, the press, and numerous other agencies interested in the cotton grower's welfare. Meetings and rallies were held, popular literature was disseminated to urge diversification, and efforts were made to arrange through bankers and merchants for loans and advances on other crops than cotton. The latter soon took the place of the earlier proposals to limit the acreage through legislation, taxation, pledge, and otherwise. In addresses before gatherings of southern bankers the Department of Agriculture pointed out that so long as money is loaned only on the prospects of a single cash crop (cotton), so long will the average farmer be compelled to raise that crop alone, with all the attendant evils. It was urged that the credit system should be changed by insisting that every farmer, as a prerequisite to obtaining a loan, adopt a plan of farming which shall come as near as possible to sustaining his family and his work animals, as well as producing the staple cash crop.

Notable advance has been made in this direction. In many of the states outlines have been drawn up for diversified systems of farming, showing the adjustment of the farm on that basis, and a vast amount of information has been sent out as to the adaptation, culture and utilization of other crops. In Texas the agricultural college has drawn up a statement for a 40-acre farm, showing the

requirements for raising the food for the family and the work animals on the farm, and leaving one-half the area for growing cotton. This plan was recommended by the Texas bankers' committee on agriculture for adoption by Texas Banks. The prospective borrower is required to fill out a blank showing the actual system followed on his farm, the stock he is keeping, and the crops he is raising for food and feed and the area in cotton. The closer his practice approaches an adequate system for making the farm self-sustaining, the better is the farmer's credit.

A direct effect of the striking object lesson furnished by the experience of 1914 has been, as stated above, to reduce the area planted to cotton about 16 per cent. and to make the crop one of the smallest in years. The U. S. Department of Agriculture has made an extensive inquiry into the average cost of growing cotton, which places that cost at approximately $20.35 an acre. As the average production of lint is 247 lb. an acre, the average cost of production is found to be about 8¼ cents per pound. Naturally the cost per acre to different growers is found to vary widely—from less than $12 to over $35. While the individual acre cost varies only moderately from year to year, the cost per pound to an individual grower varies widely from year to year, according as the yield is large or small.

Cotton exports for the year up to the end of July amounted to 8,543,573 bales, as against 9,150,801 bales at the same date in 1914. The largest falling off was in the export to Germany, from 2,785,963 bales in 1914 to 242,661 in 1915, while Italy doubled its imports. The cotton consumption in the United States was nearly the same as in 1914. There were 1,784,812 bales on hand on July 31 in public storage and at compresses, against 425,101 in 1914. Consuming establishments were also carrying about a half-million bales more than in 1914. (See also XIII, *Business Conditions.*)

U. S. Department of Agriculture.—A partial reorganization of the Department of Agriculture went into effect on July 1, in accordance with plans previously worked out by it and approved by Congress. Under this a new bureau was erected, known as the States Relations Service. It includes the Office of Experiment Stations, which has long been charged with the advisory and supervisory relations with the agricultural experiment stations in the various states, the extension work of the Department, together with the administration of the Smith-Lever Extension Act, an Office of Home Economics, and studies in agricultural education and farmers' institutes. The change involves the transfer to the new bureau of the Farmers' Coöperative Demonstration Work, previously conducted by the Bureau of Plant Industry, which receives an appropriation of $1,052,100. The farm-home management work, also formerly under the Bureau of Plant Industry, is transferred to the new Service and incorporated with the previous studies of food, clothing and household equipment to form the Office of Home Economics. The bringing together of these relations of the Department with the agricultural colleges and experiment stations, together with special studies, constitutes the new Service one of the largest bureaus in the Department.

The irrigation and drainage investigations, formerly in the Office of Experiment Stations, together with the farm architectural work, have been combined with the work on roads to form an Office of Public Roads and Rural Engineering. An independent Office of Markets and Rural Organization was established, into which was gathered work of that nature previously conducted in other bureaus, together with the administration of the Cotton Futures Act (see XIII, *Conduct of Business*); and the farm-management studies, formerly attached to the Bureau of Plant Industry, have been placed under an Office of Farm Management. Numerous minor transfers of lines of work were made between existing bureaus, and within the bureaus a sharper segregation was made between the organizations for research and for regulatory work. The object of the latter is to make definite provision for discharging the regulatory or control

functions of the Department, so that these may not interfere with the other activities.

The total appropriation to the Department for the current fiscal year is $22,971,782, an apparent increase over the preceding year of more than $3,000,000. Of this increase $2,500,000 is an emergency appropriation resulting from the ravages of foot-and-mouth disease (see *Veterinary Medicine, infra*). The above total appropriation does not, however, include the standing appropriation of $3,000,000 for meat inspection, or $1,080,000 available under the Extension Act which is administered by the Department. To its resources may also be added its allotment from the general printing fund of $500,000.

The reorganization and transfers make some changes in the bureau appropriations. Thus, that for the Bureau of Plant Industry shows a decrease of nearly $1,500,000, the present appropriation being $2,139,150. The funds allotted to the Bureau of Animal Industry aggregate $2,585,536, exclusive of the permanent annual appropriation of $3,000,000 for meat inspection and the emergency appropriation of $2,500,000 for eradication of foot-and-mouth disease. Of the total appropriation, $235,000 is specified for investigation and eradication of hog cholera and dourine and the inspection of virus, serums, etc., $438,800 for the cattle-tick eradication campaign, $607,780 for inspection and animal quarantine work, $189,060 for animal-husbandry work, and $254,090 for dairying.

The appropriations for the Forest Service aggregate $5,552,256, the bulk being devoted as usual to the protection and maintenance of the national forests. The selection and segregation of lands within the national forests that may be open to entry under the Homestead Act is continued under an appropriation of $100,000, and a new item of $60,000 is inserted for appraising timber and other resources in the national forests. There is an allotment of $250,000 for forest-fire protection, $165,640 for reforestation, and $400,000 for the construction and maintenance of improvements in the national forests.

The appropriations for the new States Relations Service, together with those for extension work under the Smith-Lever Act which it supervises, amount to $4,501,840. The Weather Bureau receives $1,666,050; the Bureau of Chemistry, $1,066,381; the Bureau of Entomology, $829,900; the Biological Survey, $446,290, of which $125,000 is specifically allotted for destroying wolves, coyotes and other injurious animals in the national forests and the public domain; the Bureau of Soils, $327,935; the Bureau of Crop Estimates, $283,480; the Office of Public Roads and Rural Engineering, $586,465; and the Office of Markets and Rural Organization, $409,050.

Several changes in the Department's serial publications occurred during the year. The *Crop Reporter*, discontinued in June, 1913, was resumed early in 1915 under the title of the *Monthly Crop Report*, succeeding the *Agricultural Outlook*. The *Departmental Circular* was established in May to serve as a convenient means for the communication of official information among the personnel of the Department, and the issue of a new periodical known as the *Agricultural Education Monthly* was begun. The *Journal of Agricultural Research*, originally issued monthly, became a weekly with the beginning of the new volume in October, and began serving in quite large measure as the medium for the publication of technical researches and investigations of the agricultural experiment stations throughout the country. A *Program of Work*, listing all the various projects of the Department, was also issued. A system of special weekly weather forecasts during the crop season was inaugurated by the Weather Bureau for the corn, wheat and cotton regions. These forecasts were telegraphed every Tuesday to state distributing centers, from which they were sent to the daily press and to weekly newspapers.

The number of employees of the Department has reached a total of 16,223, of which 12,629 are located outside of Washington. In addition, the crop-reporting service includes 143,621 volunteer crop reporters and special correspondents. The former

state statistical agents have been succeeded by an efficient corps of field agents giving their entire time to the work, each assigned to definite territory. In addition, specialists have been appointed for each of the more important crops.

State Agricultural Departments.—There is a well defined movement to increase the efficiency and the scope of the agricultural branches of the state governments, and to assign to them duties of more definite and responsible character in relation to the agricultural welfare of the states. It is recognized that a field is open to them which is not being covered, and for which no other agency is provided. On the other hand, the various lines of effort for agriculture are often widely scattered and without any coördinating head. The agricultural colleges and experiment stations are in charge of many inspection and administrative features which are essentially functions of the state governments and might quite as properly be assigned to state agricultural departments. This is being done in some states, enabling the experiment stations to confine themselves to investigation or the expert work of the inspection service, without responsibility for the enforcement of laws and regulatory measures. There are now a great number and variety of these measures, developed for the most part out of the findings and by the initiative of the experiment stations, the administration of which often makes serious inroads on the time of their specialists and interrupts their investigations. The removal of the state departments of agriculture from the sphere of political influence and the placing of them on a more efficient basis favors such a division of duties, and opens the way for enlarging their work by studies of the statistics and economics of agriculture, marketing and distribution, and other subjects, which are greatly needed.

Twenty-two of the states now have organized departments of agriculture. The plan of having state boards of agriculture is slowly changing, and in their place organized departments are being substituted, with a single responsible officer. In Pennsylvania, however, a state commission of agriculture was established in place of the former department, and in Ohio the recently established Agricultural Commission was abolished, being succeeded by a State Board of Agriculture of ten members, to be appointed by the governor, and with an executive secretary. The new board assumes most of the duties of the former commission except the control of the Ohio Experiment Station and the agricultural-extension work. In Wisconsin a new State Department of Agriculture was provided for by the legislature, with enlarged functions, and certain of the regulatory work formerly carried on by the college of agriculture was assigned to it. Prof. C. P. Norgord, for some time connected with the College of Agriculture, was appointed commissioner of the new department.

Agricultural Extension Work.—The movement inaugurated in 1914 as a nation-wide measure under the Smith-Lever Extension Act (*A. Y. B.*, 1914, p. 438) has been thoroughly organized and put in operation in all the states. The general lines along which the extension enterprise will be conducted have also been quite well determined. In each state the agricultural college having charge of the work under the Smith-Lever Act has established an extension division or service, with an extension director in charge, and has brought under it all the extension work in agriculture and home economics which the college is conducting, without regard to the source of its maintenance. As the enterprise is coöperative with the U. S. Department of Agriculture, the Department's extension work has also been grouped together and brought under the supervision of the new States Relations Service (see *supra*), and is being conducted in coöperation with the agricultural colleges. A great unified system has therefore been developed for popular practical education in agriculture and home economics, so organized as to preserve the autonomy of the state agricultural institutions, to encourage and develop local initiative and self-help, and at the same time to bring to the support of the state colleges and local organizations the national Depart-

ment of Agriculture, with its broad outlook on agricultural problems and its force of scientists and experts.

The formation on so grand a scale of a coöperative system involving national, state, and local organizations, and the general goodwill and cordiality which have marked the relations of these agencies, is probably without parallel. The funds available for this enterprise have already reached large proportions. Under the Smith-Lever Act the aggregate governmental appropriation for the year is $1,080,000, and for the current fiscal year the Department of Agriculture will expend from its direct appropriations the sum of $1,329,740. Funds contributed by the states, the agricultural colleges, counties, local communities, etc., bring the aggregate up to no less than $4,780,540. This entire amount, as previously explained, is to be expended according to definitely matured plans, conducted under the coöperative management of the agricultural colleges and the Department of Agriculture.

The experience of the past 12 years having demonstrated the value of the county agricultural agent, there was general agreement as to the importance of establishing in each agricultural county permanent headquarters for extension work, in charge of a competent county agent, to act as the joint representative of the local community, the state through its agricultural college, and the nation through the Department of Agriculture. The provision of such county agents has therefore been actively carried on, and up to the close of the year about 1,150 male county agents had been located. In addition, there are some 300 women agents, working, as a rule, in the same counties with the male county agents and devoting themselves to girls' clubs, home economics, and similar topics. About half the total revenue is expended on the county-agent system, the next largest item being that for work relating to home economics.

Another important phase, which had been previously developed and is forming an important part of the new extension organization, is the boys' and girls' club work. The clubs are organized for contests in growing various crops, raising poultry and pigs, canning, etc. This work is conducted very largely in coöperation with the school officials and teachers in the rural communities, instruction being given the children in whatever they are undertaking, and the clubs are supervised by state agents and assistants.

Other features of the extension work are the issuing of publications, conducting movable schools, making educational exhibits, and assisting the county agents and the communities by means of specialists who have their headquarters at the agricultural colleges. These specialists give attention to such matters as field crops, farm management, horticulture, live-stock improvement, dairying, poultry, marketing, plant diseases and insect pests, agricultural engineering, rural organization, home economics, etc. They take part in conducting short practical courses of instruction, or movable schools, conduct demonstrations along special lines, prepare extension publications, answer inquiries of the county agents and of farmers on a great variety of subjects, and thus supplement the information and the work of the county agents. In general, they are to gather up the available knowledge in their several specialties and particularly the results of the experiment stations which bear directly on the problems within the states, to put this information into effective form for use by the farming people, and to carry it to them directly or through the county agents by word of mouth, demonstrations, or publications. They are recognized as an increasingly important part of the extension personnel, and much attention is being given to enlarging and strengthening the force of extension specialists in practically all the states.

The organization of such a force on so large a scale, and the direction of their activities to avoid waste of time and energy and make their work effective, has been a difficult and often perplexing task. Men suited to carry on the various features of this enterprise are relatively scarce, and the work assigned to them calls not only for accurate information but for tact and good judgment. They work main-

ly away from the college and from immediate supervision, and they are therefore placed largely on their own resources and ability. State and local leaders or supervisors are in constant communication with the men in the field and go over their work with them as frequently as possible, but even then the personality of the field man is a very large factor in determining the measure of success. Already the agricultural colleges are feeling the necessity of training men for the extension work, and are giving much consideration to the courses of study essential for preparation for such work.

Rural Sociology.—The Roosevelt Commission on Country Life, in 1908, called prominently to public attention the fact that the system and conditions under which people live in the country and the opportunities open to them are just as really a part of the broad agricultural question as crop production. It gave an impetus to the study of the country-life problem, which has developed steadily ever since. Rural surveys have become yearly more common and effective. Outlines have been prepared for practical community studies. Community planning has been set on foot, attention given to training rural leaders, and the initiative of local communities has been aroused to action. The literature relating to the subject is each year becoming larger. In the *Yearbook of the U. S. Department of Agriculture* for 1914, T. N. Carver presented a plan for the organization of a rural community. The results of rural-life surveys have been reported from many states, among which may be mentioned Massachusetts, Ohio, Minnesota, and Wisconsin. The proceedings of country-life and community-service conferences have been published, and a number of books have dealt with the relation of the rural church to the improvement of rural conditions. The "Social Anatomy of an Agricultural Community" is the title of a piece of work conducted in Wisconsin, which describes the natural grouping of rural people into "social watersheds" ignoring township and county lines. This may account for difficulty in getting people of different "social basins" to work together aggressively under a township plan. The readjustment of rural population into communities, and steps in replanning a comprehensive community, are discussed as a means of alleviating such conditions.

As a result of the arousing of local initiative, rural centers are being established, in schools and churches if no other places exist, and clubs are being formed which have erected special buildings where the farmers and their families may gather for recreation and discussion. One such club building is provided with a billiard room, swimming pool, library, reading-room, and social hall. One of the first community buildings in the country was provided during the year by the board of trade of Washington, Pa., to furnish a general meeting place for town and country people. There are meeting and rest rooms, offices for the board and the agricultural bureau, a place for lectures, demonstrations, corn and apple shows, etc.; at the rear of the building are accommodations for 50 teams. The widespread improvement of roads and the installation of rural telephones are giving better facilities for communication and intercourse, and the consolidation of rural schools is affording better education facilities. These improvements are already having their effect in making country life less isolated and more attractive, and are stimulating local improvement. The county extension agents, and especially the women agents, are a great leven in this respect. (See also XV, *Recreation.*)

Women and Agriculture. — The growing interest of women in agriculture and horticulture is expressed in the organization late in 1914 of the Women's Horticultural and Agricultural Association, which held its annual conference at the New York Botanical Gardens in May, 1915. The association aims to promote interest and success in these lines of work, taking as its model similar organizations in Europe. It is said to have made rapid growth.

Two treatises on opportunities for women in agriculture have been published, one by E. B. Babcock in the University of California *Journal of Agriculture,* and the other by Elea-

nor Martin as one of a series of pamphlets issued by the Women's Educational and Industrial Union of Boston.

The replies to a letter addressed by the Secretary of Agriculture to the housewives of 55,000 crop correspondents of the Department, asking suggestions as to the ways in which the Department could render more direct service to the farm women of the country, have been compiled and published in four bulletins. They are divided into four general groups: (1) the social and labor needs of farm women; (2) their domestic needs; (3) their educational needs; and (4) their economic needs. Along with these letters from housewives were printed some of the answers to their inquiries, lists of publications bearing upon their needs, information as to what the Department is already doing, and suggestions as to other sources from which help might be secured. Incidentally, these letters reflect in an unusual way the feeling of farm women as to the inadequacies of the conditions under which they live, and the belief that the Government can help to improve these conditions through economic legislation that will make agriculture more profitable and by advice and education that will enable the people to make the most of what they have.

Farm Labor.—The U. S. Department of Labor directed effort during the year to finding employment for labor, and especially to aiding farmers in securing capable help. In this it had the coöperation of the Department of Agriculture and the Post Office Department. Distributing branches were established throughout the country, and blanks were placed in the post offices upon which employers or persons seeking employment might make application. A large percentage of the laborers directed to employment were farm hands, and the result of the year's work is said to have met with the commendation of the farmers availing themselves of this means.

Fertilizers.—The shortage of potash, due to the difficulty of securing imports from Germany, the reduced sale of mixed fertilizers in the southern states as a consequence of the cotton crisis, and the organized propaganda to extend the sale of fertilizers in the central West, were special features of the year. The shortage of potash caused a general revision of fertilizer formulae and a reduction in the proportion of this ingredient incorporated in mixed goods. New sources have been sought and utilized, and interest has been renewed in the search for domestic supplies. The German Potash Syndicate was reported early in the year to have under consideration the devising of means of denaturizing potash salts so as to preclude the possibility of their use for ammunition and military purposes but preserving their value as fertilizers, but such a plan has not gone into effect. The deposits of potash in the salt-encrusted valley floor commonly known as Searles Lake, in southeastern California, again came into prominence, it being estimated that this source contains 4,000,000 tons of water-soluble potash.

The possibility of kelp as a source of potash was further reported upon. The U. S. Department of Agriculture has been investigating for several years the kelp beds of the Pacific Coast, and summarized the results of its inquiry in a bulletin issued during the year. In the dry state the Pacific Coast kelps are said to contain about 16 per cent. of potash, corresponding to about 25 per cent. potassium chloride. On this basis it is estimated that the 390 sq. miles of kelp beds already mapped are capable of producing annually 2,266,000 tons of potassium chloride. The commercial cost of harvesting and extracting the product is not definitely known, but the statement is made that the commercial production of potash from kelp in quantities sufficient to meet the growing needs of the nation is quite practicable. It is suggested that the material may find its market first as fertilizer in the form of dried kelp. The production of potash from alunite, which occurs in large quantities in western states, has been entered upon commercially at the Utah mines. This source is claimed to insure an adequate supply of potash for agricultural purposes.

The sale of commercial fertilizers in the South fell off nearly half in several of the states, the average tonnage purchased for that group being about six-tenths that in 1914. The quality of fertilizer sold is reported as inferior to that of the preceding year, because of the lack of available supplies of potash, and the price was lower. Incidentally, the reduced sale materially affected the revenues of some of the agricultural institutions which derive their support in part from a tonnage tax on fertilizers.

The production of cyanamide, a synthetic-nitrogen industry, is assuming considerable proportions in the United States, practically the entire output being used in the preparation of mixed fertilizers. The value of the cyanamide product (64,000 long tons) is approximately $2,750,000 a year. The world's production of cyanamide, exclusive of America, is about 245,000 metric tons. (See also XXIV, *Agricultural Chemistry*, and *Industrial Chemistry*.)

Binder Twine.—In early spring the supply of binder twine used for binding the grain harvest became threatened through the closing of the port of Progreso, Yucatan, by the Mexican Government. The supply of twine for this country and Canada is made in the United States, requiring about 200,000 tons of sisal hemp a year, derived in very large part from Yucatan. No large accumulation of hemp is practiced by the cordage companies, but the supply is obtained regularly during the year. Through pressure of the United States Government the port of Progreso was opened to United States commerce and an American gunboat carried gold to the port to pay for the sisal. The supply was thus restored and the danger averted which, with the increase in area of cereals, caused apprehension for a time.

Farm Tractors.—The use of farm tractors is steadily increasing, for levelling land, plowing and harrowing, harvesting, hauling, etc. A number of tractors have been placed on the market which cost little more than a team and are reported to be giving good satisfaction. Increased efficiency, reliability, and adaptation to the conditions of farming are resulting from experience. The U. S. Department of Agriculture has published a bulletin (No. 174) reporting the experience of a large number of successful and unsuccessful users of tractors west of the Mississippi River. Lack of success is attributed in considerable extent to lack of training. Tractors of 15 h. p. are giving better results than either the larger or smaller sizes. The modern gas tractor of 10 or more horse power has thus far proved very largely to be an auxiliary of the farm horse rather than a substitute, although some successful users have been able to reduce the number of farm horses. The Department concludes that up to the present time, all things considered, the tractor appears to have made for itself no very important place in the agricultural economy of the country.

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1915.)—A discussion of some of the principles and practices of the new agriculture, economic aspects, etc., drawn from the author's experience.

DAIRYING

HUGH WEBSTER

Milk Consumption.—It is estimated by the Department of Agriculture that the average per capita milk consumption in cities of 2,500 inhabitants or over is 112 quarts per year, and is slightly higher in cities of 25,000 or over than in smaller cities. There is apparently less variation in milk consumption by months in the large cities than in the small ones, the fluctuations being less than 10 per cent.

The Wisconsin Experiment Station reports that approximately half of the cheese of the United States is made in that state. Two-thirds of this is American and the remaining one-third is Swiss, brick, and Limburger. Many fancy varieties are produced but they are of little commercial importance. Since 1909 the production has been decreasing in other leading states and increasing in Wisconsin. More than half of the cheese factories are coöperative. The farmers' movement in selling cheese has reduced the wide margin between producers' and consumers' prices comparatively little. It has been learned that a great portion of the middleman's charges in marketing cheese are legitimate, and for the present, necessary.

Waste in Milk Delivery.—The Department of Agriculture has found that in the District of Columbia the shortest distance traveled by any milk delivery wagon was 10.4 miles per day and the longest was 30, the average distance being 19.1 miles. The total distance covered by all the wagons was 93 times the entire length of all the streets in the District. Data from three other cities bear out these results. It is claimed that at the present time half of what the consumer pays for milk is required to maintain this wasteful system of distribution. It estimated also that throughout the country generally the daily loss in the handling and delivery of milk from the time it is shipped varies from 0.5 to 4 per cent. and averages 2.15 per cent. of the amount handled by each dealer.

Milk Inspection.—Studies at the New York State Station indicate that very little correlation exists between the quality of the milk and the score as expressed by any of the three principal score cards now in use. The apparent reason for this lack of relationship is that a large number of the items included on the score card have little or no effect upon the number of bacteria present in the milk, too great emphasis being placed upon unessential factors in the score cards, with a consequent lessened emphasis upon the factors which actually do affect the milk.

Replies from 184 cities in answer to inquiries sent out by the Department of Agriculture indicate that 22 cities are not spending any money for milk inspection and only 43 spend five cents or more per capita. The average of all cities reporting milk inspection spend 4½ cents per capita. In a study of the ordinances of 32 cities of a population of 100,000 or more, a committee of the International Association of Dairy and Milk Inspectors has found that 80 per cent. of the ordinances in cities which have made a reduction of over 40 per cent. in the last two years in the death rate from diarrhea and enteritis among children under two years of age, are clear, explicit, and in conformity with advanced methods of dairy sanitation, while only 54 per cent. of the ordinances of cities which have made a reduction of less than 40 per cent. in the death rate are of this kind.

Coöperative Associations.—Steady progress has been made in the organization of cow-testing associations under the direction of the Dairy Division of the Department of Agriculture. Coöperative associations among dairymen for the interchange of pure-bred bulls for use in grading up their herds have been instituted. On Oct. 1 there were 210 cow-testing associations and 22 bull associations in the United States. Particular attention is being paid to the encouragement of these coöperative associations and of diversified farming, particularly dairying, in the South. The spirit of coöperation has been especially evi-

dent in Wisconsin within recent years. There are over 1,500 farmers' companies in that state, of which 347 are creamery organizations, 290 cheese factories, and 35 live-stock shipping associations. In point of number and the money handled, the dairy enterprises exceed all other co-operative agencies.

Improved Methods.—A process of bottling hot pasteurized milk has been devised by which the milk is heated to 145° F., held in tanks for 30 minutes at that temperature, and then put into bottles which have been steamed for two minutes just previous to filling. This process of bottling hot pasteurized milk eliminates the possibilities of reinfection during bottling and cooling. The pasteurization of milk in the bottle has received attention at several of the experiment stations. Bottled milk exposed 50 minutes in water at 145° proved very satisfactory from the viewpoint of the consumer. It showed a satisfactorily low bacterial count, the creaming ability was not materially reduced, and no perceptible heated flavor could be detected. A process for the removal of garlic flavor from milk and cream has been perfected by the Department of Agriculture, which consists in blowing air through milk which is heated to at least 145°.

Contrary to the popular opinion that yellow color in cream and butter is indicative of richness in butter fat, the Missouri Station has demonstrated that very little relation exists between the two characteristics. Yellow coloring matter has been identified as a substance called "carotin," found in certain feeds, which if fed to cows will impart its color to the milk and cream. The principal feeds containing carotin are the green pasture and fodder crops, which accounts for highly colored dairy products in the spring and summer. All breeds of cattle were found to be alike in producing white cream and butter on carotin-poor rations. Breed difference in respect to color production has been overemphasized. However, it is true that for some unexplained reason some breeds of cows make use of more carotin than other breeds when making their milk fat. A method of measuring color in butter and oleomargarine has been devised by the Bureau of Standards. It is proposed to adopt this method in establishing a standard for oleomargarine coloration. (See also XXIV, *Industrial Chemistry.*)

Dairy Records.—Among the phenomenal dairy records for the year are the following: The Holstein cow Finderne Pride Johanna Rue completed a year's record of 28,403.7 lb. of milk containing 1,176.47 lb. of fat. The three-year old Holstein Friesian heifer Finderne Holingen Fayne produced 24,612.8 lb. of milk containing 1,116.05 lb. of fat in one year. The ten-year old Guernsey cow Murne Cowan completed a year's record of 24,008 lb. of milk containing 1,098.18 lb. of fat. The five-year old Holstein cow Tillie Alcartra completed a record milk yield for the year of 30,452.6 lb. of milk and 951.3 lb. of fat.

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LIVE STOCK

Hugh Webster

Live-Stock Values.—During the year the numbers of every class of live stock increased. Such general increase has not occurred in any of the previous five years. An impor-

tant feature of the live-stock situation at the present time is the turn from a long, steady decline in numbers of beef cattle to an increase on Jan. 1, 1915, of 3.4 per cent. In the live-stock markets relatively smaller marketings of calves and cows during the year indicate the disposition to increase supplies. Notwithstanding the increased numbers, the value per head was about seven per cent. higher than in the preceding year.

Abnormal conditions due to the European War and to the troubles in Mexico interfered with the calculations of our free-trade policy. It is evident, however, that free trade has not resulted in an increased supply of meats for the retailer and consumer, nor abundance of stock cattle for the western grazier and corn-belt feeder. There have been marked decreases in imports both of meats and live stock compared with 1914. During the early part of the fiscal year 1914, imports of live stock from Mexico and Canada were on an extensive scale, but toward the latter part of the year cattle trade with both countries was materially decreased. For the nine months ending March, 1915, imports of cattle to the United States amounted to 465,448 head, as compared with 700,821 head for the same time in 1914.

Live-Stock Marketing and Coöperation.—Efforts at coöperation have been made by the farmers of the Middle West to facilitate the distribution and marketing of their live-stock products. Their ability to work together in this way has been demonstrated in the remarkable spread of the live-stock shippers' association movement. The Office of Markets and Rural Organization of the Department of Agriculture is conducting a study of existing markets for and systems of marketing live stock, meats and animal products, for the purpose of suggesting ways and means by which they may be improved and their cost reduced. This work includes a study of the efficiency of methods of feeding, yardage, and handling of live stock, the charges made for such service at the market centers, and the transportation facilities to and from market centers. Certain localities have devised systems of marketing, such as the direct selling of home-prepared meat products, especially farm-cured hams, bacon, and sausage; municipal slaughtering plants; live-stock shippers' associations; and the shipment of meat by parcel post. These efforts are to be encouraged and extended into localities where methods of distribution are still in an elementary stage. In an effort to improve the breeding stock of the South coöperative cattle sales have been conducted by the Bureau of Animal Industry of the Department of Agriculture, assisted by the Shorthorn and Aberdeen-Angus breed associations.

Horses.—There has been considerable speculation as to the effect of the European War upon the horse supply and values in this country. It has been feared that such large numbers would be exported as to cause an acute shortage of horses. Apparently there is no immediate danger of this. During the 12 months previous to July, 1915, 436,760 horses and mules were exported from the United States. It is estimated by the Department of Agriculture that on Jan. 1, 1915, there were 24,000,000 horses in the country. The horses which have been purchased for the most part are of a grade which this country could dispense with to the advantage of its horse-breeding industry. Experts claim that the big demand for horses will probably occur at the close of the war. At that time the countries at war, with the exception of Russia, will be short of horses for agricultural purposes. This country and Russia together have about 50 per cent. of all the horses in the world, estimated at about 100,000,000. During 1914 there were imported to this country for breeding purposes 708 stallions and 502 mares, the greater proportion of these being of the Percheron, Belgian, and Shire breeds.

Sheep and Wool.—Sheep have declined in numbers in the eastern farming states, but have increased on the ranges. Prices for wool have been good, and with a liberal feed supply on the ranges there has been an effort toward reviving or increasing sheep raising on the ranges. In Montana and Wyoming the opening

of new settlements is decreasing the range area, but not to an extent sufficient to offset the tendency to increase in other sections of the range country. A conference of sheep and wool specialists was held in San Francisco in August. The chief topic under consideration was the so-called Australian system of shearing and classifying wool and the possibilities of its adoption in this country. It was generally agreed that our method of preparation of wool for market is behind that used in Australia and New Zealand. An organization of Wyoming and Utah sheepmen has been the first to put a model plant in operation in America and to demonstrate the value of the Australian system.

A recent importation of ten Corriedale rams and 54 ewes was made from New Zealand by the Department of Agriculture. This breed resulted from a Lincoln-Merino cross and in part from a Leicester-Merino cross. It is of interest to stockmen because it offers a combination of mutton and wool qualities, retaining to some degree the wooling characteristics of the long-wooled Merino, and breeds fairly true to type.

Poultry and Eggs.—Numerous egg-laying contests have recently been held in Australia and at various state experiment stations in this country. The results of these competitions have demonstrated that a large egg record does not always mean the greatest profit. It has also been found that, all things considered, there is very little difference in the egg-laying ability of the different breeds of hens. Efforts are being made by the Department of Agriculture to instruct farmers as to the most approved methods of marketing eggs. It is estimated that there is an annual waste of $50,000,000 in eggs, due to needless breakage of the eggs in transit, and to unnecessary spoiling and deterioration that comes from bad handling on the farm and in all stages of handling from the producer to the consumer.

Considerable progress has been made by investigators on some of the technical phases of egg production. At the Maine Station it has been demonstrated that the record of egg production or fecundity of a hen is not of itself a criterion from which to predict the probable egg production of her female progeny. It is believed, however, that the capacity for high egg production is inherited through the sire rather than the dam. The Connecticut Storrs Station has found that a close correlation exists between the yellow pigmentation in a hen and her previous egg-laying activity, and that in Leghorns the color of the ear lobes is perhaps a better criterion of laying activity than either legs or beak. Laying appears to remove yellow pigment with the yolks and in consequence the ear lobes, the beak, and the legs become pale by this subtraction of pigment.

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VETERINARY MEDICINE

WILLIAM A. HOOKER

Societies and Institutions. — The fifty-first annual meeting of the American Veterinary Medical Association was held at Oakland, Cal., Aug. 30 to Sept. 2. At this meeting a plan for reorganization was rejected, but a new standard of entrance requirements was adopted for veterinary colleges desiring to remain upon the accredited list. It was voted to establish or acquire an official publication to be issued monthly and known as the *Journal of the American Veterinary Medical Association.* Later in September the *American Veterinary Review* was purchased and the transfer made on Oct. 1. Dr. P. A. Fish of Ithaca, N. Y., was offered and accepted the editorship of the new journal. The officers elected for the year were Dr. R. A. Archibald of Oakland, Cal., president, and Dr. C. M. Haring of Berkeley, Cal, secretary

The Rockefeller Institute for Medical Research selected a site at Princeton, N. J., for its new department of animal pathology, of which Dr. Theobald Smith is the head, and the erection of buildings was commenced.

Foot-and-Mouth Disease.—The work of arresting and eradicating foot-and-mouth disease, which broke out in October, 1914, and threatened the live-stock industry of the United States, having appeared in 21 States and the District of Columbia (*A. Y. B.*, 1914, p. 451), was pressed with great vigor. It was carried on with funds appropriated for general expenses until Jan. 25, when a deficiency appropriation of $2,500,000 passed by Congress was approved by the President. All areas infected or suspected of being infected were quarantined, and infected herds were destroyed as soon as the disease appeared and the premises thoroughly disinfected. Up to May 1, when the greater number of afflicted or exposed animals had been slaughtered, a total of 147,644 head had been disposed of. The pure-bred stock exhibited at the National Dairy Show at Chicago, valued at more than two million dollars, was the only infected stock not slaughtered. Of the 719 head in the herd, 712 contracted the disease, while the seven remaining proved immune or had it so slightly that it was not noticeable. The disease appeared among these animals in an exceedingly mild form, none of the 712 succumbing to it. While the udders of many of the cows were affected, only six of the entire lot lost one or more quarters. About 75 per cent. of the calves born while the cows suffered from the disease died. After careful tests had been made to show that none of the animals were virus carriers the herd was released, after having been in quarantine for seven months at an expense per head which amounted to several times the average value of farm cattle. The work of eradication was greatly complicated by the appearance of the disease in swine, which more than any other animal were responsible for its spread. All Federal restrictions on the movement of live stock because of the disease were removed on Oct. 9 from Indiana, Michigan and Virginia, at which time the whole country, with the exception of northern Illinois, was supposed to be free from the disease, but it again appeared in Massachusetts, at Leicester, about a week later. The great importance of eradicating the disease from this country is emphasized by a recent outbreak in Denmark, where the disease was detected in no less than 5,734 herds, including 200,000 cows and 130,000 hogs, from November, 1914, up to Aug. 5, 1915.

Hog Cholera.—In a report issued on April 23, it was estimated by the Bureau of Crop Estimates that the losses of swine from disease, about 90 per cent. of which were due to hog cholera, would be a little less than one hundred per thousand for the year ended March 31, 1915.

Texas Fever and the Cattle Tick.—On Sept. 15 an area of 9,306 sq. miles in Mississippi, Alabama, Georgia and South Carolina was released from quarantine, making a total territory of 262,469 sq. miles freed from the cattle tick since the commencement of the work of eradication in 1906. As the original territory under quarantine was 741,515 sq. miles, more than one-third of the area has been

cleared. Kentucky, Missouri, and Tennessee have succeeded in eradicating the cattle tick from within their borders, and California and Virginia are practically free from the pest. Figuring upon four and one-half million cattle in the freed area, it has cost about 72 cents per head to eradicate the ticks therefrom, which is but a small proportion of the increase in the value of the stock due to being placed in a free area. Experiments conducted by the Dairy Division of the Bureau of Animal Industry with a view to determining the direct effect of the cattle tick on dairy cows show that when a sufficient food supply is furnished its effect is more pronounced upon the milk production than upon the body weight.

Dourine.—This disease of the horse made its appearance in Nebraska during the fall of 1914, having apparently been introduced in a shipment of horses from Wyoming. The work of eradicating it in Montana, Wyoming, and the Dakotas has progressed under difficulties.

Anthrax.—Announcement was made by Dr. Adolph Eichhorn of the Federal Bureau of Animal Industry of the preparation of an anti-anthrax serum which is twice as potent as imported serum and has both protective and curative properties. Of 700 cattle, sheep, horses, and swine upon which it was tested, 482 were saved. It has also been used with considerable success in treating the disease in man.

Measly Beef.—Ransom found that when measly beef carcasses are exposed for six days to a temperature not exceeding 17° F., the vitality of the cysticerci is destroyed. As a result the new regulations governing the inspection of meat reduce the required period of refrigeration at 15° F. from three weeks to six days, and considerable expense is eliminated.

Serodiagnosis.—It was found at the Mississippi Experiment Station that the Abderhalden serum test for pregnancy is applicable to mares and probably practicable for use with high-priced stock.

Commercial Biological Products.—The regulations governing the preparation and shipment in interstate commerce of viruses, serums, toxins, and analogous products intended for use in the treatment of domestic animals were amended by the Secretary of Agriculture, and amended regulations became effective on Oct. 15. The new regulations, which are stricter in some important respects than those formerly in force, were promulgated with a view to protecting the farmer from the purchase of worthless or contaminated products, particularly anti-hog-cholera serum.

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DISEASES OF PLANTS

Walter H. Evans

American Phytopathological Society.—The sixth annual meeting of the American Phytopathological Society was held at Philadelphia, Dec. 29, 1914, to Jan. 1, 1915. A special meeting of the society was held at

Berkeley, Cal., Aug. 3-5, in affiliation with the American Association for the Advancement of Science. A western branch of the society was organized at Corvallis, Ore., on Dec. 29, 1914.

Legislation.—A quarantine declared against Maine and a portion of New York on account of the powdery scab of potatoes was withdrawn on Sept. 1, it having been determined that soil conditions elsewhere in the United States made it improbable that the disease would spread and become troublesome. Largely on account of the seriousness of the citrus canker, the legislature of Florida has created a Plant Board which is charged with the control of plant diseases and insect pests; Prof. W. Newell, of the Texas Experiment Station, has been appointed chairman.

Nonparasitic Diseases.—R. E. Smith, in an address before the Pacific Coast branch of the American Phytopathological Society, stated as his belief that most, if not all, of the so-called physiological diseases of plants will ultimately be found due to some specific organism. McAlpine, as a result of a prolonged study of what is known in Australia as bitter pit of apples, claims the trouble is due to faulty transpiration and other physiological activities of the fruit. Clinton has reviewed the evidence and repeated some of his investigations on the cause of the mosaic of tobacco, and reaffirms his conclusion that neither bacteria nor fungi are responsible for the trouble. On the other hand, Allard claims the evidence indicates it is caused by some organism not yet recognized. Stewart and Sirrine have reported on Long Island a peculiar disease of potatoes, characterized by a poor stand and weak, spindling growth. It is thought to be associated with extreme heat of the previous season when the seed tubers were being formed. The failure of olives to set fruit in a district of Italy is attributed by Petri to sulphur fumes injuring the stigmas of the flowers, thus preventing their fertilization.

Biological Studies of Fungi.—Arthur has reported the results of three years' study of heteroecism in rusts, the alternate hosts of about 30 species of rusts having been found. Dietel is continuing to publish on his investigations on the teleutospore stages of rusts, and Fischer on specialization in rusts. Reed found a marked correlation between attacks of powdery mildews and the physiological condition of their host plants. Stakman found numerous biological races of grass and cereal rusts, and claims resistance is due to hypersensitiveness of the host plant. Partial resistance and immunity are considered as differing in degree only.

Cereal Diseases.—The yellow rust of grains, common and most destructive in Europe, was found in the United States in the summer of 1915. It was first discovered at Sacaton, Ariz., and later recognized in Idaho, Washington and Montana. Eriksson claims additional proof for his mycoplasma theory of the overwintering of cereal rusts. Beauverie, Buchet and others report additional evidence of the presence of spores and mycelium within the seed coats of grains and grasses. Montemartini reports that many rusts in Italy are carried over in their uredo stage. A study of the stalk disease of cereals in Europe by Voges shows about a dozen species of fungi are responsible for the trouble, the general symptoms produced by all being quite similar. A new disease of corn is reported in Iowa in which the pith of the stalks and the roots are affected, and no ears are formed. The cause is as yet unknown.

Forest-Tree Diseases.—Although the active campaign for the control of the chestnut blight has been abandoned, there is still considerable interest in the spread of the disease and in the life history of the fungus. The disease was reported in Nebraska during the year, where it had been introduced on nursery stock. Rogers and Gravatt report the occurrence of the fungus on the chinquapin, which was previously believed to be immune to its attack. A new bacterial disease of chestnuts in Italy was described by Cavara. A rotting of chestnut and oak timber in New York was reported as due to *Hymenochæte rubiginosa*. The species of *Peridermium* occurring on pine trees in the United States have been de-

scribed by Hedgcock and Long. A disease of maples in New York due to the plugging of the water-conducting system by a fungus causing sudden wilting has been described by Rankin, and later reported in Virginia. A new disease of the Engelmann spruce in the Rocky Mountain Region has been found by Weir to be due to *Herpotrichia quinquesepta*. Massee has described a disease of birch trees in Great Britain, Sweden, Finland, Germany and Switzerland due to *Plowrightia virgultorum*. A serious disease of mulberry trees in France and Italy is reported, the cause of which is unknown. A new disease of filberts in Oregon, that is thought to be caused by bacteria, was described by Barss.

Diseases of Fruits and Fruit Trees.—The citrus canker which was reported in the Gulf States a year ago quickly assumed serious importance. The cause of the trouble, which is considered to have been brought from Japan, is bacterial and not a fungus, according to the investigations of Clara Hasse. Fawcett has found *Pythiacystis citrophthora*, a cause of lemon gummosis, present not only in California, but in Florida, Cuba, and the Isle of Pines, and probably in Brazil and southern Europe. Waite and Brooks have described under the name "stigmonose" diseases of apples, pears and Japanese plums which are the result of response to insect punctures. Two new diseases of York Imperial apples in Virginia are reported by Reed. Martin claims his experiments show the spot disease of Jonathan apples is due to a fungus. Hawkins found that peaches affected with brown rot lost most of their total sugars and all their cane sugar. The pentosan content remained nearly the same. The fire or bacterial blight of pears and apples seems to be spreading in Europe, numerous reports of the killing of the blossoms being noted. Reimer reports a number of stocks that are resistant to bacterial blight on the Pacific Coast, and recommends their more extended use. The gooseberry mildew, *Sphærotheca mors-uvae*, continues to spread in Europe, its presence in Italy having been lately reported. Studies have been in progress in France to determine the relation between atmospheric conditions and the appearance of epidemics of grape downy mildew. Adeline Ames has made a study of temperature relations of fungi which cause rots of fruits and vegetables, from which it appears that such products should be held in cold storage as nearly as possible at zero temperature.

Diseases of Vegetables, etc.—The powdery scab of potatoes, concerning which there was some anxiety in 1914, was reported in isolated localities in Oregon, Utah and British Columbia, where there had been no seed exchange for many years. This would seem to indicate that the fungus may not be of recent introduction from Europe. Lutman and Cunningham have shown that the common potato scab is due to *Actinomyces chromogenum*. Sherbakoff has published a monographic study of the species of *Fusarium* and related organisms which attack potatoes. The black wart of potatoes is spreading in Europe, but varietal resistance to the disease is reported. Most of the resistant varieties are said to have white flowers. Experiments for the control of the black wart disease by soil treatments have proved failures in many instances. A new bacterial ring rot of potatoes is reported in Germany. A destructive fruit rot of tomatoes in this country has been found by Clara Jamieson to be caused by *Phoma destructiva*. A bacterial disease of tomatoes was reported in Italy. Bean anthracnose is said to have recently been very troublesome in parts of Germany. Townsend has found that two species of bacteria can cause crown gall of beets.

Miscellaneous Diseases.—Whetzel described a number of diseases of peonies which are commonly reported as free from fungus attack. A bacterial wilt of nasturtiums was described by Mary K. Bryan, and a bacterial disease of lettuce by Nellie A. Brown. A blue mold, *Peronospora hyoscami*, is said to be destructive in tobacco seed beds in Australia. A bacterial disease of cultivated mushrooms is reported from caves near St. Paul, Minnesota. A leaf spot of alfalfa, new to America, was noted in Kansas by Melchers. Manns reports

bacterial diseases of sweet peas, clover, garden beans, and soy beans as all due to the same organism, *Bacillus lathyri*.

Control of Plant Diseases, Fungicides, etc.—Jones claims by selective breeding to have definitely fixed a variety of cabbage resistant to the disease known as yellows. Blodgett has found sulphur efficient for the control of hop mildew. Scott reports barium polysulphide as an efficient fungicide. Dementev, a Russian investigator, reports solutions of various kinds injected under pressure into tree trunks were taken up in sufficient quantity to be of value in combating parasites. Vermorel and Dantony recommend the addition of casein to Bordeaux mixture and gelatin to copper-acetate solutions, to increase their spreading power and adhesiveness.

ECONOMIC ENTOMOLOGY

WILLIAM A. HOOKER

American Association of Economic Entomologists.—At the annual meeting of the American Association of Economic Entomologists, held at Philadelphia, Dec. 28-30, 1914, G. W. Herrick was elected president, R. A. Cooley, W. E. Rumsey, and E. F. Phillips vice-presidents, and A. F. Burgess secretary. A special meeting of the Association was held at Berkeley, Cal., on August 9 and 10. Weiss of the New Jersey Experiment Station made a report on recent insect importations into New Jersey, among which were no less than eight different scale insects that had been brought in on nursery stock, the destructive Argentine ant taken from the packing in a case of roses from Germany, and some 200 egg masses of the gipsy moth discovered on evergreens in a nursery. A similar report of pests intercepted was made by Sasscer of the Federal Horticultural Board. A number of new pests came to attention, among which mention should be made of a wheat thrips (*Prosothrips cognatus*) in Kansas, Oklahoma and Missouri, a thrips (*Euthrips occidentalis*) which causes curly leaf of potatoes in California, the apple maggot as an enemy of blueberries in Maine, etc.

Plant Lice or Aphididae.—The year saw considerable activity in studies of this important group of insects. Dr. Edith M. Patch of the Maine Agricultural Experiment Station found that the pond lily aphidid, *Rhopalosiphum nymphææ*, is no other than a summer migrant from the plum where it is a troublesome pest. She pointed out that American entomologists have commonly applied the name *Schizoneura americana* to two distinct species of plant lice; the first, which should be known as *S. lanigera* (*americana* in part, of authors), inhabits the cluster or aphid rosette of the American elm, from which it migrates to apple, mountain ash, and hawthorn; while the other, which should be known as *S. americana*, causes the curling or rolling of the leaf of the American elm and migrates in spring to the juneberry, passing the summer on its underground stems. The discovery of its summer residence on the juneberry was made by Dr. Patch. She also reported upon aphidids of the rose family occurring in Maine, and called attention to the fact that two distinct clover aphidids are quite generally confused under the name *Aphis bakeri*. Baker also reported upon studies of *S. lanigera*. Baker and Turner found the brown grape aphis to be a summer migrant from *Viburnum prunifolium*. A report upon investigations of the pea aphis with relation to forage crops, by Davis, was issued in September. Gillette and Bragg reported studies of Colorado aphidids having alternate food habits. Observations made at the Kansas Experiment Station seem to indicate that there is a direct relation between the severity of the infestation of aphidids and the spread of fire blight (*Bacillus amylovorus*).

Gipsy Moth.—Studies of the dispersion of the gipsy moth show that the first-stage larva is carried long distances by the wind and that this is probably the most important way in which the pest is disseminated. A report of the status of the gipsy-moth work in New England appeared in May.

House Fly.—Work carried on by the Federal Bureau of Entomology has shown powdered hellebore to be

an effective and practical substance for use in the destruction of fly larvae in horse manure. While the cost of treatment with hellebore is somewhat greater than with borax, it possesses the advantage that the bacteria are not injured or the fertilizing value of the manure reduced in any way. A maggot trap which takes advantage of the habit of the larvae of the house fly of migrating considerable distances away from the manure pile when about ready to pupate was constructed by Hutchison of the Federal Bureau of Entomology, and bids fair to be made considerable use of. Townsend of the National Museum reported that the house fly should be known as *Promusca domestica* rather than *Musca domestica.*

Cotton Boll Weevil.—In the course of its dissemination the boll weevil invaded Georgia for the first time. Further studies of its biology and of its relation to cotton planting in the arid west were reported by Coad.

Ox Warble or Ox Botfly.—Carpenter and his associates reported having found that upon emerging from the egg the larvae of *Hypoderma bovis* gain entrance to the body of their host by penetrating the skin; Hadwen has confirmed the observations.

Pear Thrips.—The pear thrips, an important pest in California and discovered in 1911 to occur in New York State, appeared in Maryland for the first time and was a source of injury in an orchard near Baltimore.

Mediterranean Fruit Fly.—Important papers on the fruit fly in Bermuda, its life history from the standpoint of parasite introduction, and the susceptibility of citrus fruit to its attack were issued by the Bureau of Entomology. Several of the parasites of this fly introduced into Hawaii have become established and are rapidly increasing in numbers.

European Pine-Shoot Moth.—A report of investigations of *Evetria buoliana,* a recent introduction from Europe, was made in February by Busck, who recorded its occurrence in 20 localities in nine states. In none of these localities, except on Long Island, had the species existed for more than the last two years.

Two-Lined Chestnut Borer.—*Agrilus bilineatus,* life history studies of which were reported by Chapman, is said to be responsible for the death of great numbers of oaks in Minnesota and elsewhere, including many on valuable residence property in St. Paul and Minneapolis. In some of the outlying country districts of Minnesota areas of several acres in extent have been completely devastated by the borer, leaving the land treeless.

Apple Root Borer.—*Agrilus vittaticollis* was found during the course of studies by Brooks to be quite generally distributed throughout the Appalachian fruit region, where it is the source of considerable damage to young apple trees.

Insecticides and Machinery.—Experiments have shown that arsenate of lime will control the codling moth and other insects equally as well as arsenate of lead; the calcium arsenate is considerably cheaper and mixes with lime-sulphur or barium-sulphur equally as well as does lead arsenate (see also *Horticulture, infra*). Safro reported that nicotin sulphate may be safely added to and applied with Bordeaux mixture in all cases where Bordeaux alone may be safely used. In work at the Wisconsin Experiment Station it was found that the onion fly passes a period of 10 to 14 days after emergence as an adult before it begins to lay its eggs. In the meantime it can be attracted to and destroyed by a sweetened arsenical sprayed upon the plants. McColloch found that dusting the silks with 63 per cent. dry arsenate of lead for the corn ear worm to be profitable where corn is grown for roasting ears. The use of an arsenical bait flavored with orange or lemon has been found most attractive and appetizing for grasshoppers. Experiments by Yothers indicate that cotton-seed oil soap, which does not possess the disagreeable odor of fish-oil soap, can be used as a substitute for it. This author also reported the successful use of water under some 60 lb. pressure for the control of the mealy bug by a large citrus grower in Florida. Other substances found to be of value are quassiin as a contact insecticide, cactus solution as an adhesive for arsenical sprays, and paradichlorobenzene as a fumigant. The need of a

reliable method for the destruction of insects in seeds, cotton, etc., led to the perfection of a vacuum chamber into which gaseous insecticides can be introduced, which has proved to be very efficient. New fumigating machines invented in California, in which hydrocyanic-acid gas can be generated outside and conducted into tents through hose, have been found to furnish many important advantages over the pot system of dosage. A simple machine with wheels was devised by Metcalf for use in collecting flea-beetles on potatoes.

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AGRICULTURAL LEGISLATION

H. L. Knight

Federal Legislation. — Practically all the agricultural legislation completed in the closing session of the Sixty-third Congress was embodied in the Agricultural Appropriation Act, the provisions of which are reviewed on another page (see *Agriculture, supra*); attempts of the two houses to incorporate rural-credits legislation in this Act failed in conference, but a committee of investigation was authorized (see I, *The Sixty-third Congress*). Efforts to obtain legislation authorizing the licensing of warehouses for storing agricultural staples and so increasing the value of warehouse receipts as security for loans (*A. Y. B.*, 1914, p. 458) were unsuccessful; each house adopted a measure for the purpose but no success followed attempts to harmonize the wide differences between them. The delegate of the United States to the International Institute of Agriculture was instructed to present resolutions asking for an international conference in 1917 on steadying the world's price on cereals and other staples. A standard barrel was prescribed for fruits and vegetables and other dry commodities handled in interstate commerce; regulations are to be established by the Department of Commerce and the act becomes effective July 1, 1916 (see also *Horticulture, infra*). A somewhat similar measure providing standards for apple boxes, which had previously passed the Senate, failed of enactment.

State Legislation.—The volume and relative importance of the state legislation in 1915 were unusually great. There is apparently an increasing interest by legislators in agricultural matters, as well as a renewed tendency to look to legislation for the amelioration of many economic and other rural problems.

Agricultural Credit and Coöperation. — In Missouri provision was made, subject to ratification by the voters in November, 1916, for a state land bank with a capital of $1,000,000; this bank, if established, may make loans on farm land up to 50 per cent. of its value for periods of from five to 25 years. North Dakota will vote on a constitutional amendment to allow the formation of rural-credit associations and the establishment of a state fund for loans to these associations or individuals on the security of farm property, and Minnesota on an amendment allowing the state school funds to be invested in first mortgages on improved farm lands. Building-and-loan associations in Kansas were authorized to issue rural-credit shares, investing the proceeds in farm mortgages. Oregon

authorized rural-credit unions and coöperative state banks, and provided that farmers' associations may quarry lime under certain conditions. North Carolina appointed a state superintendent to organize and supervise coöperative associations and credit unions, and further regulated land and loan associations. New Mexico authorized the establishment of agricultural, viticultural, and horticultural coöperative associations under prescribed regulations. Colorado and South Carolina also regulated the activities of coöperative associations, and the latter state also provided that the state might assist in securing loans on stored cotton and charge commissions therefor. A Texas law provided that cotton and grain might be deposited in bonded warehouses and notes issued for six months at four per cent. on certificates of deposit which should be accepted as negotiable security. Ohio appointed a committee to study rural credits and coöperation, and California a commission on rural credits and land colonization.

Marketing Farm Products.—A system of state commission markets was provided in California for handling agricultural, dairy, and fishery products. Idaho appointed a director of farm markets to coöperate with producers and consumers, as well as to investigate alleged frauds in the sale of real estate to home seekers, regulate advertising pertaining to colonization, maintain a farm-labor employment bureau, list farm property for sale for the use of prospective buyers, and otherwise improve farm-life conditions. Colorado authorized studies of markets and marketing methods, and Maine provided for studies of marketing farm produce and purchasing farm supplies. Colorado and Kansas required the licensing and bonding of commission merchants, and Michigan amended its laws on this subject. Massachusetts communities of over 10,000 were authorized to provide public markets, and in default thereof must designate public market spaces (see also XI, *Municipal Ownership*). Wyoming and Oregon prohibited unfair discrimination by buyers against producers of farm products. California, Montana, Oregon and Washington required the labeling of eggs and dairy products from foreign countries, and Montana and Oregon of meat and meat products as well. Arizona and Minnesota required the labeling of cold-storage eggs, Connecticut of pasteurized milk, and North Carolina of bleached flour.

Standardization of Farm Produce.—In California standard grades were prescribed for apples, certified seed potatoes, and dairy products, with a system of state inspection, as well as standard packages for most fruits and vegetables. Connecticut, Massachusetts and Vermont established standard grades and packages for apples. Delaware enacted a grading and marking law. Montana amended its apple-box law, and Washington and New York their apple-grading laws, the latter by permitting increased variations from the standard. Colorado prescribed standard containers for small fruits and berries, and North Carolina required the marking of packages of fruits and vegetables to indicate the grower or packer. Standard cotton grades were promulgated in North Carolina and a system of official cotton graders authorized. Michigan established a state brand for high-grade butter, and Washington and Oregon further safeguarded the use of brands. Montana and Missouri provided for grain inspection and grading in elevators, warehouses, etc.

Quarantine and Inspection Laws.—There was legislation in most of the states to secure a more effective quarantine against the introduction of diseases through imported stock, feeding stuffs, and other sources of infection, as well as for the provision of more adequate reimbursement of farmers suffering losses. Minnesota required the disinfection of stock cars and Kansas the disinfection of grain sacks. Several states took steps to purchase and sell hog-cholera serum, while in others additional restrictions were put on the use of this material by laymen. Michigan required the pasteurization of all by-products of cheese factories before return to the farm.

In a number of states increased restrictions were put on the running at large of farm stock. In Arkansas, Connecticut and Oregon, this had spe-

cial reference to mongrel male animals and the handicap thus inflicted on live-stock improvement, while in North Carolina the object was increased efficiency in tick eradication.

Nevada established quarantine regulations for domestic animals, bees, and agricultural and horticultural plants. Florida passed a comprehensive plant-quarantine act, and Washington a new horticultural law which included the inspection of nurseries, orchards, berry and vegetable farms, insecticides and fungicides, etc. each county levying a tax for the inspection work. Colorado and Oregon amended their laws as to county inspection, and Montana as to nursery inspection and fruit importation, and the latter also prohibited misrepresentation of nursery stock. New York amended its nursery-stock sales law.

The fertilizer laws of Minnesota, New Hampshire, New York and South Carolina were amended, chiefly by requiring statements as to the availability of the ingredients, and Pennsylvania provided for lime inspection. A new feeding-stuffs law was adopted in Michigan, and amendments in Connecticut, Kansas, New Hampshire and South Carolina. New Mexico provided for stallion inspection and registration, and California, Michigan and Montana amended their laws on the subject, while Ohio repealed its previous legislation. Idaho regulated Babcock testing, and New Jersey the importation of bees and the pasteurization of milk and cream, while Maine provided for the inspection of milk and dairy products to check milk-borne diseases. New Hampshire began the inspection of insecticides and fungicides, Delaware of seeds, and Michigan of galvanized wire fencing. Indiana amended its nursery-inspection requirements, and New Hampshire and Washington their seed-inspection laws.

Agricultural Education and Extension Work.—Ohio amended its laws to provide that agriculture must be taught in all villages and rural schools receiving state aid. Texas further defined the scope of the instruction required. New York and North Dakota authorized counties to establish agricultural and training schools, the former with state aid, and Kansas permitted the boards of education to purchase land for teaching agriculture. The Federal Smith-Lever Act of 1914 was formally accepted by the various states, and legislation enacted in many of them to facilitate the use of county or local funds in extension work (see also *Agriculture, supra*).

Miscellaneous.—Ohio reëstablished its Board of Agriculture and abolished its Agricultural Commission, while Pennsylvania established a state Commission of Agriculture. Delaware appointed a commission on milk supply. Porto Rico provided for the sale of small holdings to laborers. Connecticut regulated the operation of live-stock insurance companies.

Counties in Montana were authorized to buy seed grain for needy farmers, taking a lien on their property. South Carolina empowered the commissioner of agriculture to distribute inoculating material for leguminous crops. North Carolina authorized the use of convict labor in lime-crushing plants and on county demonstration farms, and the sale of lime to farmers at cost. Several states, notably Rhode Island, took steps to regulate the billboard and sign nuisance along country roads (see also VII, *Nuisance*). North Carolina and Wisconsin provided for the registration of farm names.

HORTICULTURE

E. J. Glasson

Crop Conditions.—There were no serious crop shortages in 1915, although production as a whole was less than in 1914. A notable exception was the peach crop, which was estimated at about 40,000 cars in 1915, as compared with 28,000 cars in 1914. The commercial apple crop was estimated at 40,000,000 bbl. as compared with about 50,000,000 bbl. in 1914. California shipped about 18,675,000 boxes of citrus fruits and 16,500 cars of fresh deciduous fruits, as compared with 19,400,000 boxes of citrus fruits and 16,000 cars of deciduous fruits in 1914. Florida's

citrus crop amounted to 9,500,000 boxes, as compared with 7,500,000 boxes in 1914. The Irish potato crop was estimated at 368,000,000 bus., as compared with the final estimate of 406,000,000 bus. for 1914. The 1914 pack of tomatoes, corn, and peas amounted to 15,222,000, 9,789,000, and 8,847,000 cases, respectively.

Foreign Trade.—In the fiscal year ending June 30, 1915, the United States exported fruits, vegetables and nuts worth $45,746,268, as compared with $38,786,792 in 1914. The foreign demand continued active during the year, especially for dried and canned fruits and vegetables, but exporters were being handicapped by disturbed ocean shipping facilities. Only $53,230,927 worth of fruits, vegetables and nuts were imported in 1915, as compared with $68,554,793 worth in 1914. The export figures are: fruits, $34,229,906; vegetables, $10,813,151; nuts, $703,211. The import figures are: fruits, $27,081,396; vegetables, $9,329,732; nuts, $16,819,799. Exports of fresh and dried apples amounted to $11,358,124 in 1915, as compared with $8,718,146 in 1914. Orange exports again increased to $3,851,013. Beans, peas and potatoes worth $5,984,257 were exported in 1915, as compared with $2,339,007 worth in 1914. Of the imports, bananas dropped from $22,379,519 in 1914 to $17,243,035 in 1915. Exports of nursery stock dropped from $315,065 in 1914 to $170,218 in 1915. We imported $3,748,666 worth of nursery stock in 1915 as compared with $3,597,008 in 1914.

Standard Fruit Barrel.—An act of Congress which is to become effective July 1, 1916, prescribes a standard barrel for fruits, vegetables, and other dry commodities. For commodities other than cranberries this standard barrel must contain 7,056 cu. in. (See also *Agricultural Legislation, supra.*)

Marketing of Fruits and Vegetables.—Acting under the law creating a food and market commission (*A. Y. B.*, 1914, p. 459), the newly created Foods and Market Department of New York State instituted public auction sales for disposing of the 1915 fruit crop. Auctions were held in New York City and in other places central to the fruit districts. In order to regulate shipments and prevent congestion, cold storage and warehouse storage were provided by the Department in different parts of the state and growers were kept informed of market conditions and prices. Notwithstanding the newness of the auction machinery and opposition from certain sources, the auction sales were successful in standardizing prices throughout the state, and the movement received the approval of growers.

The Department of Agriculture, acting through the Office of Markets and Rural Organization, has greatly extended its activities in behalf of the fruit and vegetable industries (see also *Agriculture, supra*). The information furnished by the Office is of general interest to growers, shippers, dealers, transportation companies and consumers.

Fruit Juices.—The Department of Agriculture has been actively engaged in working out methods for the commercial manufacture of fruit juices. The work thus far accomplished has shown that juices of red and black currants, blackberries, black raspberries, sour cherries and peaches may easily be prepared on a large scale by the methods used for the preparation of grape juice, as they retain their characteristic properties well on being sterilized and stored away. Strawberry juice and red-raspberry juice are not suited for preparation on a large scale because of the readiness with which the distinctive colors and flavors change. Huckleberry juice is somewhat characterless. Pineapple juice requires special methods for its successful preparation not necessary in case of the other juices. Its preparation on a commercial scale, however, is of marked promise. Satisfactory methods for the preparation of lemon and orange juices have not been developed. The peculiar change in flavor of lemon juice stored after sterilization, even at low temperatures, is an obstacle to be overcome before the preparation of the juice on a large scale can be considered advisable. The problem of preparing orange juice is not without promise. It is not unlikely that highly specialized methods in which

cold storage will play a prominent, if not dominating, part will be found to be required.

The Department has worked out a process for making apple syrup in the home from fresh cider. Processes have also been developed for concentrating apple cider and grape juice by freezing and then running the crushed ices through a centrifugal machine. The syrupy portions of the juices are thus separated from the crystallized water.

Shipment of Pollen.—Tests conducted by the Department of Agriculture show conclusively that citrus pollen can be successfully shipped from Florida to Japan and be in a viable condition on arrival four to six weeks after it is gathered. The most promising method for shipping the pollen over long distances appears to be that of drying the anthers *in vacuo* over sulphuric acid. The vacuum glass tubes were filled with one to two inches of anthers, covered with a half-inch of cotton, exhausted to about 0.5 mm. pressure in the presence of sulphuric acid, and the tube was then sealed. As far as practical the pollen was kept at a temperature of 10° C. until sealed.

Spraying Materials.—As a result of experiments conducted to determine the value of barium-sulphur and arsenate of lime as substitutes for lime-sulphur and arsenate of lead for spraying fruit trees, W. M. Scott concludes that the efficiency of these new spray materials has been sufficiently demonstrated to commend them to fruit growers for trial. The principal advantage of barium-sulphur over lime-sulphur is that the polysulphids of barium can be produced in the form of soluble crystals while those of calcium can not. The chief advantage of arsenate of lime over arsenate of lead is the cheaper cost of the former material. To increase spreading power and adhesiveness, Vermorel and Dantony recommend the addition of casein to Bordeaux mixture and gelatin to copper-acetate solution. It is reported from Russia that solutions of various kinds injected into tree trunks are taken up in sufficient quantities to be of value in combating parasites. (See also *Economic Entomology, supra.*)

Treatment of Tree Wounds.—Contrary to the commonly accepted opinion, the New York State Station has found, as results of a four-year experiment, that the dressings commonly applied to pruning wounds retard rather than accelerate the healing of the wounds. The effects of the dressings used are so injurious to peach wood that wounds on peach trees should never be covered. For sprayed orchards at least it appears unnecessary to apply dressings to wounds under four or five inches in diameter to prevent the entrance of fungi. It remains to be proved whether dressings have any real value in covering large wounds. Of the materials used shellac was the least injurious and seemed to exert a stimulating influence upon the wounds for the first season.

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FORESTRY

E. J. GLASSON

Appropriations under the Weeks Law.—In accordance with the provisions of the Weeks law (*A. Y. B.*, 1911, p. 423), appropriations for the purchase of lands for protecting watersheds of navigable streams were terminated on June 30, 1915. As reported by the United States Forester, all of the $8,000,000 that actually became available under the law, except some $500,000, has been spent. There have been acquired or approved for purchase 1,285,000 acres at a cost of $5.83 per acre. Because of the more immediate need for stream protection in the East, purchases have thus far been limited to the southern Appalachian and White Mountain regions. As measured by the opinion of various forestry and other influential organizations an excellent beginning has been made on a great conservation programme, which, however, must be continued several years longer to accomplish the purpose which the legislation was intended to secure. A continuation of the appropriation is being strongly urged.

Forest Legislation.—Minnesota amended her constitution to set aside as state forests some two and a half million acres of school and other state lands better adapted for the production of timber than for agriculture. The state forester was authorized to employ inmates of sanatoria for consumptives on the state forests. Pennsylvania provided that counties may sell the tax lands for reforestation through the state Forestry Department. On the other hand, the appropriations of the Department were cut down to a point where efficient fire protection became impossible and severe fire losses occurred during the spring. In Washington, the state cut-over lands deemed suitable for reforestation may be so reserved in perpetuity, and in that case are to be reforested and handled as state forests. In New Hampshire, lands may be conveyed to the state for reforestation and after ten years repurchased on payment of the cost of improvements and four per cent. interest. Counties, municipalities and institutions are allowed to reforest their tracts on plans furnished by the state. The Vermont legislature passed a bill authorizing cities and towns to buy land for forestry purposes, the profits to be used for the schools of each place. Tracts of over 40 acres are to be managed by the state forester. In West Virginia the position of state forester was created under the Department of the Forest, Game and Fish Warden. Texas passed a bill providing for the appointment of a state Board of Forestry and a state forester. The new law permits the governor to accept for the state gifts of land for forest reserves and provides for purchase of similar lands. It also permits coöperation with the Government under the Weeks law in the protection of the forests from fire. North Carolina provided more stringent laws regarding camp fires, brush burning, etc., and also provided for the acquisition of state forest land by gifts and purchase. An order-in-council has been adopted by the Canadian Government prohibiting the importation into Canada of all forest-plant products, including logs, tan bark, posts, poles, ties, cordwood, lumber, originating from any one of the states of Maine, Massachusetts, New Hampshire, Connecticut, and Rhode Island, unless accompanied by a certificate showing that they have been inspected by the U. S. Department of Agriculture and found free from gipsy moth. This order was made necessary by the discovery of the moth in shipments of forest products, even pulpwood, received from the United States.

The importation of European pine to the United States was prohibited after July 1, 1915. This action has

been taken to save American pine trees from the pine-shoot moth which has long done much damage in European forests. This pest has already become established in nurseries and parks in some states, but it is believed that by pruning and destroying the affected shoots the disease can be stamped out if no more infected nursery stock is imported into the country. (See also *Economic Entomology, supra.*)

National Forests.—Statistics corrected to March 31, 1915, show a total of 162 national forests in the United States, with a total area of 184,611,596 acres within national-forest boundaries. Of this amount, 21,337,533 acres is private land. The work of classifying the lands on the national forests is being continued. The area of the Chugach Forest, Alaska, is reduced nearly one-half by a proclamation signed by President Wilson, returning approximately 5,802,000 acres to the public domain. The areas involved are not of high enough timber value to warrant Government protection. During the fiscal year ended June 30, 1915, the national forests turned into the U. S. Treasury nearly $2,500,000, an increase of more than $40,000 over the receipts of the previous year. The timber sales, which amounted to $1,164,000, yielded on account of the depressed condition of the lumber industry about $79,000 less than those of the previous fiscal year, but the gain was made possible by larger revenues from other sources. The grazing receipts, which totaled $1,125,000, increased $127,000 over 1914, and the water-power receipts, which amounted to not quite $90,000, showed an increase of nearly $42,000. In addition to the timber sales, 123,168,000 board ft. of timber valued at $206,464.13 was cut under free-use permits granted to settlers and others living on or near national forests. The portion of the national-forest receipts to go to the various states in which the forests are located, for county school and road purposes, amounts to over $850,000. The greater use of the national forests for recreation purposes has been stimulated by a law supplementing the permit system and providing that tracts of five acres or less may be leased for periods not to exceed 30 years. More than 2,000 cottages have been built under the permit system and a large number of applications under the new leasing system have already been received.

Forest Schools.—The College of Forestry of the University of Washington, at Seattle, has established a number of courses designed for specialization in the business of lumbering. During the summer, the Oregon Forest School extended the practical training of students by coöperating with the Federal Forest Service in cruising work. The Department of Forestry at Cornell added a full summer term of instruction, to be given partly at Ithaca and partly on a large forest tract in the Adirondack Mountains. The students are required to spend the ensuing fall in getting practical experience in the logging woods. Fourteen high schools in the state of New York have begun the provision of school forests by planting from one to five thousand trees. The Dendrological Department of the State College of Forestry at Syracuse is working on a collection of native woods for distribution to the schools. The U. S. Forest Service has adopted the policy of sending out to forest schools brief reports on its results of forest investigations in advance of publication, or when the information does not warrant the expense of special publication.

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FISHERIES

HUGH M. SMITH

The Fishery Industry.—The general condition of the fishery industry is satisfactory; the trend is toward an increased production each year, with increased capital invested and persons engaged. No general statistical canvass has been made recently, but the approximate extent of the United States fisheries in 1915 was: number of fishermen, shoresmen, preparators, etc., 231,000; value of vessels, boats, apparatus, shore and other property, $123,975,000; value of products, $71,900,000.

Among the branches whose condition is unfavorable are the shad and alewife fisheries, especially in the Chesapeake basin, owing to unrestricted use of nets that cut off fish from the spawning grounds; the sturgeon fishery in all parts of the country, which demands radical action by the states in order to prevent the commercial extinction of the sturgeons; and the lobster fishery, referred to below. The mackerel fishery gives evidence of recovering from the decline that began abruptly in 1886. The oyster industry, by far the most important branch of the American fisheries, continues to grow because of more general attention to cultivation; the annual product now exceeds 32,500,000 bus. and is valued at more than $15,000,000; in Chesapeake Bay, however, the region of greatest production, reactionary legislation has retarded progress. The high-sea whale fishery is nearly suspended; restoration of the bowhead, right, and sperm whales to anything approaching former numbers could be achieved only through a protracted international close-time.

New England Vessel Fisheries.—The great high-sea fisheries centering at Boston and Gloucester in 1914 employed 400 steam, sail, and gasoline-screw vessels, which landed 7,598 trips of fish, aggregating 162,589,000 lb., valued at $4,395,000. Compared with the previous year, the number of trips decreased 1,231, the catch increased 373,000 lb., and the value decreased $588,000. There was an increase in cod, haddock, and mackerel, and a decrease in hake, pollock, cusk, halibut, swordfish, and herring. As in all recent years, the grounds lying immediately off the United States coast yielded by far the largest part of the catch, namely, 73 per cent., while the grounds off the Canadian provinces are credited with 18 per cent. and off Newfoundland with nine per cent.

Otter-Trawl Fishery.—This controversial fishery, which is of comparatively recent inception in the United States, has been under investigation by the Government pursuant to an act of Congress. The inquiry was completed and a full report was submitted to Congress in 1915.

This fishery is of great importance in America because it employs a means of capture that is the climax of effectiveness for bottom fishes and introduces into our bank fisheries a new element of destruction which has given rise to opposition and misgivings among the line fishermen. The otter-trawl is a fine-mesh bag-like net, 150 ft. long and 70 to 90 ft. wide at its mouth, hauled over the bottom at from three to four miles an hour by a steam vessel specially designed for the purpose. The fishing may be done in water of any depth up to 200 fathoms. The mouth of the net is kept open by an otter board on each side which flares outwardly and exerts a kite-like action when the net is being towed. The American otter-trawl fishery employs less than a dozen vessels. This small fleet nevertheless catches many million pounds of cod, haddock, and other demersal fish, and has become a conspicuous factor in the fisheries of the northeast coast.

The findings of the government investigators on the principal questions at issue are as follows: (1) otter-trawls do not destroy the spawn of commercially important bottom fishes, all of which have floating eggs; (2) the bottom over which the trawls are hauled is not injuriously disturbed with reference to the creatures (animals and plants) which directly or indirectly serve as food for the commercial fishes; (3) otter-trawls compared with lines take a much larger proportion of edible fishes too small

to market; (4) otter-trawl fishermen compared with trawl-line fishermen market a much larger proportion of small fish and destroy more small fish not utilized; (5) there is as yet no evidence that the banks resorted to by the otter-trawl vessels are being depleted of their fishes, but the ultimate effects of otter-trawling remain to be determined; (6) to keep the otter-trawl within reasonable limits and gauge its effects most accurately, it is recommended that fishing be restricted to Georges Bank, South Channel, and Nantucket Shoals—the region to which, up to the present time, the fishery has practically been restricted.

Lobster Fishery.—A canvass of the lobster fishery completed in 1914 indicates a precarious condition which demands radical action by the various states. A decline which began 25 years ago has now reached a stage when lobsters have ceased to be a staple food and have become a luxury. The catch has declined 60 per cent. in the period named, while the returns to the fishermen have increased 178 per cent. The fishery is prosecuted from Maine to Delaware, inclusive, attaining greatest extent in Maine and Massachusetts. In 1914 the lobster fishery engaged 4,508 persons and the invested capital was $2,460,898; the year's catch was 12,267,017 lb., valued at $2,394,822; Maine supplied approximately 60 per cent. of these totals.

Alaska.—In 1914 the fishing industry of Alaska reached its highest development. The number of persons employed was 21,200, of whom about 4,200 were natives. The value of the investments was $37,038,000, of which nearly $32,000,000 represented the salmon industry. The value of the products was $21,243,000, an increase of $5,500,000 over 1913. The increase was largely in salmon. Eighty-one salmon canneries were in operation, and the output of canned salmon was 4,056,000 cases of 48 one-pound tins, valued at $22,089,800. This pack was the largest ever recorded, exceeding the previous high record of 1912 by 2,012 cases and $2,628,000. The total number of salmon caught was 54,651,915, with a gross weight of approximately 361,840,000 lb.

Next in economic importance are the halibut, with 14,807,797 lb., valued at $762,757; the cod, with 15,045,378 lb., valued at $438,208; and the herring which, in the form of oil, fertilizer, bait, and food, was valued at $123,217.

Two government and five private salmon hatcheries in Alaska have an annual capacity of 350,000,000 eggs. In 1914 the plants of salmon fry and fingerlings aggregated 110,668,000, chiefly red salmon; of these 64,355,000 were from the private hatcheries, and the owners secured rebates of taxes in the amount of $25,741, at the rate of 40 cents per thousand fry liberated.

Fur Seals.—The Alaskan seal herd which resorts to the Pribilof Islands in Bering Sea is rapidly recuperating from the effects of pelagic sealing suspended in 1912 as the result of an international convention in which the United States, Great Britain, Russia, and Japan participated (*A. Y. B.*, 1912, p. 223). A census taken by special investigators in 1914 showed that the herd numbered 294,687 animals of all classes, an increase of 26,382 over 1913. Another enumeration made in the summer of 1915 gave 103,526 newborn pups and an equal number of mother seals, which figures, with others based on partial counts of harems, indicated the total strength of the herd to be 360,000. There is a large surplus of male life, but under the existing law the utilization of seals is restricted to a few thousand required for the food purposes of the natives, and commercial killing will not be resumed until 1917.

Fishery Legislation.—The Sixty-third Congress expired without making effective the treaty of April 13, 1908, providing for joint international control over fisheries in the boundary waters of the United States and Canada. Canada took steps to give effect to the treaty in 1910, and the failure of the United States to observe the obligations imposed by the treaty leaves the international fisheries in a most unsatisfactory condition because of diverse jurisdictions and laws.

The legislatures of only a few important fishery states were in regu-

lar session during the year, and the fishery legislation passed was, in general, of minor importance. The only act of far-reaching economic and ethical importance enacted was the Maryland law modifying and in important respects repealing the so-called Haman law, which provided for, and had resulted in, the survey and demarcation of the public oyster beds, their reservation from conversion to private ownership, and the establishment of oyster culture on barren bottoms under conditions which apparently gave some protection and security of tenure to lessees. The United States and the state jointly expended approximately $200,000 in making a survey of all oyster bottoms within the state but after the work was completed and the results began to appear in applications for the lease of the barren bottoms, certain persons engaged in oystering on the natural beds, or interested in the maintenance of the *status quo*, began a violent attack on the law and particularly on the interpretation assumed as a basis for the survey. After a most bitter legislative contest the law was drastically modified, so as to "break" the survey. As a result considerable areas of so-called "barren bottom" were returned to the public fishery as "natural oyster rock," and the state has become liable for heavy damages through breach of contracts with oyster planters.

Bureau of Fisheries.—The work of the Federal Government in propagating and distributing food fishes attained greater importance in 1915 than ever before. The permanent hatcheries operated numbered 50, supplemented by 76 auxiliary and field stations, located in 32 states and Alaska; and the output was planted in the waters of every state and territory. The aggregate product of the hatcheries was 4,288,758,000, representing about 50 species; the increase over 1914 was 241,000,000. Among noteworthy activities of the Bureau during 1915 in connection with the fishing industry have been: (1) the continuation of the survey of little known or unknown fishing banks lying off Oregon and Washington, disclosing the presence of important halibut grounds to which commercial fishermen have resorted and taken many million pounds of halibut and other species; (2) the establishment in Maine rivers of the humpback salmon from the Pacific coast; (3) practical demonstration of the commercial possibilities of the tilefish, a valuable food fish found in deep water off the Atlantic coast, leading to the inauguration of a regular fishery; (4) the extension and improvement of pearl-mussel culture, and the inoculation of food fishes with 345 million larval mussels of the species on which the pearl-button industry depends; in addition to numerous biological and physical investigations of interior and coastwise waters. The appropriation of the Bureau of Fisheries for the fiscal year 1915-16 was $1,095,820.

STATISTICS OF AGRICULTURE

WORLD'S PRODUCTION OF PRINCIPAL CROPS, 1904–1914

(*Yearbook of the Department of Agriculture*)

	1904	1909	1912	1913	1914
Barley (bu.)	1,175,784,000	1,458,263,000	1,466,977,000	1,625,558,000	1,379,888,000
Corn (bu.)	3,109,252,000	3,563,226,000	4,371,888,000	3,613,213,000	.....
Cotton (bales)	21,005,175	20,679,334	24,696,670	.....	.....
Flaxseed (bu.)	107,743,000	100,820,000	130,417,000	131,549,000	.....
Hops (lb.)	178,802,000	128,173,000	225,213,000	174,485,000	[2]234,826,000
Oats (bu.)	3,611,302,000	4,312,882,000	4,617,394,000	4,696,646,000	4,196,508,000
Potatoes (bu.)	4,298,049,000	5,595,567,000	5,931,493,000	5,792,739,000	.....
Rice (lb.)	115,735,800,000	131,660,408,000	[1]87,669,557,000	.....	.....
Rye (bu.)	1,742,112,000	1,747,123,000	1,886,517,000	1,873,973,000	1,729,625,000
Sugar (long tons)	12,271,659	14,289,100	15,584,000	17,975,197	.....
Tobacco (lb.)	2,146,641,000	2,742,500,000	2,696,401,379	2,722,190,030	.....
Wheat (bu.)	3,163,542,000	3,581,519,000	3,791,951,000	4,128,711,000	3,726,103,000

[1] Data not strictly comparable with earlier years.
[2] Preliminary.

WORLD'S PRODUCTION OF PRINCIPAL CROPS, BY COUNTRIES, 1904–1914

(*Yearbook of the Department of Agriculture*)

	1904 Production (000 omitted)	1909 Production (000 omitted)	1912 (000 omitted)		1913 (000 omitted)		1914 (000 omitted)	
			Acres	Production	Acres	Production	Acres	Production
BARLEY (bu.):								
Algeria	37,106	31,511	3,430	32,887	3,152	50,031	[2]	[5]39,000
Austria-Hungary	119,451	153,582	5,613	149,120	6,007	162,602	.....	147,086
Canada	43,872	55,398	1,582	49,378	1,613	48,319	1,496	36,201
France	38,827	46,144	1,877	49,079	1,878	46,116	1,826	47,000
Germany	135,409	160,551	3,928	159,924	4,087	188,709	4,010	140,000
Japan	80,000	87,219	3,132	90,559	3,296	101,477	3,293	102,757
Russia (European)	343,981	464,734	28,120	455,958	30,165	557,575	30,844	400,000
Spain	60,000	81,579	3,298	59,994	3,869	68,772	3,404	72,272
United Kingdom	64,474	71,116	1,814	60,112	1,930	67,778	1,870	66,642
United States	139,749	173,321	7,530	223,824	7,499	178,189	7,565	194,953
CORN (bu.):								
Argentina	175,189	177,155	8,456	295,849	9,464	196,642	10,260	204,562
Austria-Hungary	89,757	210,241	8,388	224,373	8,723	231,869	[2]	[2]
Bulgaria	12,758	20,472	1,579	28,475	1,404	32,000	[2]	31,000
Canada	20,242	19,263	298	16,950	278	16,773	256	13,924
Egypt	30,000	65,000	1,903	60,857	1,923	57,044	.....	66,744
France	19,482	26,075	1,177	23,733	1,020	21,455	1,141	22,000
Italy	90,546	99,289	3,938	98,668	3,888	108,388	3,680	105,006
Mexico	83,131	170,000	[1]13,375	190,000	.....	190,000	[2]	190,000
Roumania	19,598	70,138	5,104	103,921	5,305	114,662	4,942	110,230
Russia	25,920	39,598	4,055	79,608	4,210	72,793	3,893	80,608
Servia	9,498	34,453	1,446	22,833	1,445	23,621	[2]	20,000
South Africa	8,784	20,000	[2]	[3]30,830	.....	[3]30,830	[2]	[3]30,830
Spain	21,255	26,433	1,149	25,069	1,105	25,140	1,137	30,325
United States	2,467,481	2,552,190	107,083	3,124,746	105,820	2,446,988	103,435	2,672,804
COTTON (bales):								
Brazil	220	265	[2]	277	.....	277	.....	.....
French Indo-China	1,200	1,200	.....	14	.....	.....	.....	.....
Egypt	1,305	1,045	1,787	1,554	1,789	1,565	.....	.....
India	3,727	4,123	21,615	2,751	22,028	3,858	.....	.....
Mexico	253	200	.....	200	.....	200	.....	.....
Persia[4]	71	128	.....	129	[2]	[2]	.....	.....
Peru	45	44	.....	89	[2]	[4]110	.....	.....
Russia (Asiatic)	504	418	1,326	667	1,373	731	.....	.....
Turkey (Asiatic)	66	131	.....	131	.....	.....	.....	.....
United States	13,439	10,005	.....	13,703	.....	14,157	.....	.....
HOPS (lb.)								
Australasia	.....	2,206	2	1,857	.....	2,788	.....	2,872
Austria-Hungary	.....	20,577	56	48,426	56	23,315	[2]	31,117
Belgium	.....	3,861	6	10,168	6	7,395	[2]	7,560
France	.....	5,029	7	8,758	7	7,867	[2]	8,955
Germany	.....	13,356	67	45,334	67	23,408	[2]	55,157
Russia	.....	8,267	24	14,084	24	16,973	24	14,084
United Kingdom	.....	24,022	35	41,997	36	28,632	37	[6]56,813
United States	.....	50,697	.....	53,371	.....	62,899	[2]	[6]57,060
OATS (bu.):								
Argentina	.....	31,984	2,548	69,169	2,946	75,783	3,087	50,981
Austria-Hungary	177,523	251,277	7,528	231,221	8,146	270,834	.....	247,568
Canada	202,827	353,466	9,966	391,629	10,434	404,669	.....	.....
Denmark	40,000	42,170	1,059	44,868	[2]	46,755	[2]	48,000
France	261,264	331,183	9,840	313,656	9,833	311,157	9,848	325,000
Germany	477,852	628,712	10,841	586,987	10,967	669,231	11,148	620,000
Russia	1,081,034	1,145,387	45,974	1,067,965	47,774	1,226,666	42,694	800,000
Sweden	50,117	69,292	1,952	87,766	[2]	99,815	[2]	52,557
United Kingdom	191,565	184,370	4,075	180,266	3,961	180,647	3,879	180,500
United States	891,596	1,007,129	37,917	1,418,337	38,399	1,121,768	38,442	1,141,060
POTATOES (bu.):								
Austria-Hungary	639,407	682,927	4,879	683,779	4,926	627,728	.....	.....
Belgium	82,846	90,358	387	121,481	395	117,613	.....	.....
Canada	74,746	99,085	484	84,885	473	78,544	.....	.....
France	375,000	613,041	3,863	552,074	3,749	477,111	.....	.....
Germany	1,702,803	1,716,143	8,257	1,844,863	8,432	1,988,591	.....	.....
Italy	29,000	63,273	514	56,313	722	66,035	.....	.....
Netherlands	96,695	97,275	426	157,810	420	91,957	.....	.....
Russia	1,082,723	1,204,528	11,646	1,395,620	12,056	1,307,060	.....	.....
Spain	84,000	98,860	632	93,089	[2]	90,000	.....	.....
Sweden	78,020	61,981	378	65,765	383	75,367	.....	.....
United Kingdom	265,713	256,752	1,208	213,783	1,173	283,912	.....	.....
United States	278,985	389,195	3,711	420,647	3,668	331,525	.....	.....

[1] Area refers to 1910. [2] No official statistics. [3] Census figures of 1911. [4] Exports. [5] Including Tunis. [6] Commercial estimate.

WORLD'S PRODUCTION OF PRINCIPAL CROPS, BY COUNTRIES—*Continued*

	1904 Production (000 omitted)	1909 Production (000 omitted)	1912 (000 omitted)		1913 (000 omitted)		1914 (000 omitted)	
			Acres	Production	Acres	Production	Acres	Production
RICE (lb.):								
Egypt	141,000	653,458	235	439,799	252	506,895	.....	.....
Formosa	2,598,100	1,446,000	1,189	575,406	1,236	1,543,220	.....	.....
FrenchIndo-China	5,000,000	5,000,000	.....	.....	.....	.....	.....	.....
India	72,325,000	86,712,000	71,623	63,805,168	70,583	63,093,184	.....	.....
Italy	760,500	647,000	360	598,100	362	739,221	.....	.....
Japan	18,658,700	16,375,000	7,360	7,141,362	7,393	7,142,418	.....	.....
Java and Madura	6,431,000	7,566,000	5,860	[1]7,459,050	7,150	8,905,350	.....	.....
Korea	3,200,000	3,200,000	.....	[1]1,390,970	.....	2,218,293	.....	.....
Madagascar[2]	.....	953,000	.....	953	.....	953	.....	.....
Philippine Islands	544,000	1,018,000	2,666	717,441	2,820	1,377,875	.....	.....
Siam	6,824,000	6,824,000	3,558	3,214,258	.....	[3]3,214,258	.....	.....
Spain	394,600	282,065	95	332,358	96	303,310	.....	.....
United States	619,400	702,709	732	721,764	836	740,931	.....	.....
RYE (bu.):								
Austria-Hungary	138,009	164,898	7,910	170,420	7,752	164,529	.....	145,203
Belgium	22,000	23,154	650	21,312	641	22,463	645	21,000
Bulgaria	13,000	6,906	529	8,422	457	10,826	[4]	9,842
Canada	2,995	1,715	127	2,428	119	2,300	111	2,017
Denmark	18,000	18,922	607	16,083	[4]	16,637	[4]	17,000
Finland	.....	12,085	[4]	12,344	[4]	10,289	[4]	10,806
France	53,343	54,934	2,969	48,890	2,905	49,452	2,914	50,000
Germany	396,075	446,763	15,489	456,600	15,849	481,169	16,057	440,000
Netherlands	14,000	17,652	564	16,094	562	16,895	560	14,635
Russia	1,008,381	896,833	73,180	1,042,072	74,990	993,068	[5]71,636	909,982
Spain	19,000	34,901	1,944	18,867	1,917	27,916	1,877	23,950
Sweden	20,960	25,728	989	23,323	[4]	22,266	[4]	27,599
United States	27,242	29,520	2,117	35,664	2,557	41,381	2,541	42,779
SUGAR, CANE (long tons):								
Australia	113	165	.....	190	.....	199	.....	335
Brazil	197	244	.....	235	.....	204	.....	204
Cuba	1,040	1,521	.....	1,896	.....	2,444	.....	2,598
India	15	1,872	.....	2,451	.....	2,584	.....	2,263
Java	885	1,222	.....	1,384	.....	1,443	.....	1,421
Mauritius	215	192	.....	167	.....	213	.....	242
United States	673	1,095	.....	1,184	.....	989	.....	1,139
BEET (long tons):								
Austria-Hungary	.....	1,365	.....	1,125	.....	1,872	.....	1,659
Belgium	203	243	.....	231	.....	276	.....	222
France	804	701	.....	448	.....	851	.....	769
Germany	1,927	2,046	.....	1,474	.....	2,591	.....	2,577
Netherlands	.....	194	.....	237	.....	276	.....	206
Russia	1,206	1,109	.....	1,809	.....	1,200	.....	1,814
United States	208	380	.....	535	.....	619	.....	655
TOBACCO (lb.):								
Austria-Hungary	111,815	190,274	.....	188,190	.....	173,349	.....	.....
Brazil[6]	52,832	64,654	[4]	54,466	[4]	64,788	.....	.....
Cuba	42,421	59,323	[4]	42,030	[4]	72,585	.....	.....
Dutch East Indies	90,125	134,100	.....	182,427	.....	180,024	.....	.....
Germany	75,797	62,120	39	85,662	35	58,953	.....	.....
India	450,000	450,000	1,049	450,000	[4]	450,000	.....	.....
Japan	106,075	91,850	72	96,095	77	111,430	.....	.....
Philippine Islands	33,100	40,258	141	65,219	170	101,545	.....	.....
Russia	204,298	207,451	186	266,197	155	254,669	.....	.....
Santo Domingo	.....	30,000	[4]	18,000	[4]	28,000	.....	.....
Turkey (Europ.)	.....	49,177	.....	.....	.....	.....	.....	.....
United States	665,461	1,065,765	1,243	979,355	1,234	970,734	.....	.....
WHEAT (bu.):								
Argentina	120,598	156,162	17,042	166,190	17,096	187,391	16,242	113,904
Austria-Hungary	203,998	186,085	12,942	257,347	11,854	232,193	.....	190,655
Australasia	84,627	73,612	7,644	81,384	7,429	100,223	9,453	112,159
Canada	76,427	166,744	10,997	224,159	11,016	231,717	10,293	161,280
France	296,606	356,193	16,979	336,284	16,166	321,000	16,049	319,667
Germany	139,803	137,999	4,759	160,224	4,878	171,075	4,990	160,000
India	357,162	285,189	31,141	370,515	29,524	362,693	27,697	314,608
Italy	150,400	190,378	11,751	165,720	11,842	214,405	11,783	169,442
Roumania	53,738	56,751	5,114	88,924	4,011	83,236	5,218	49,270
Russia	706,706	783,270	70,736	720,042	75,168	959,818	[5]62,316	776,960
Spain	110,000	144,105	9,625	109,783	9,644	112,401	9,681	116,089
United Kingdom	39,083	65,188	1,970	59,162	1,790	58,441	1,905	64,446
United States	552,400	683,530	45,814	730,267	50,184	763,380	53,541	891,017

[1] Year preceding. [2] Data for 1908. [3] Data for 1912. [4] No official statistics.
[5] European Russia only. [6] Exports.

PRODUCTION OF PRINCIPAL CROPS IN THE UNITED STATES, 1904–1915

(*Yearbook of the Department of Agriculture*)

(000 omitted)

	1904	1909 (census)	1912	1913	1914	1915[1]
TOTAL:						
Barley (bu.)	139,749	173,321	223,824	178,189	194,953	237,009
Buckwheat (bu.)	15,008	14,849	19,249	13,833	16,881	15,769
Corn (bu.)	2,467,481	2,552,190	3,124,746	2,446,988	2,672,804	3,054,535
Cotton (500-lb. bales)[2]	13,438	10,005	13,703	14,156	16,135	11,161
Flaxseed (bu.)	23,401	19,513	28,073	17,853	13,749	13,845
Hay (tons)	60,696	68,833	72,691	64,116	70,071	85,225
Hops (lb.)	49,359	50,697	53,371	62,899	43,415	.....
Oats (bu.)	894,596	1,007,129	1,418,337	1,121,768	1,141,060	1,540,362
Potatoes (bu.)	332,830	389,195	420,647	331,525	409,921	359,103
Rice (bu.)	21,096	21,839	25,054	25,744	23,649	28,947
Rye (bu.)	27,242	29,520	35,664	41,381	42,779	49,190
Sugar (short tons)	657	888	855	1,034	969	.....
Tobacco (lb.)	660,461	1,055,765	962,855	953,734	1,034,679	1,060,587
Wheat (bu.)	552,400	683,366	730,267	763,380	891,017	1,011,505
AVERAGE PER ACRE:						
Barley (bu.)	27.2	22.5	29.7	23.8	25.8	32.0
Buckwheat (bu.)	18.9	16.9	22.9	17.2	21.3	19.6
Corn (bu.)	26.8	25.9	29.2	23.1	25.8	28.2
Cotton (lb.)	204.9	154.3	190.9	182.0	209.2	172.5
Flaxseed (bu.)	10.3	9.4	9.8	7.8	8.4	10.1
Hay (tons)	1.52	1.35	1.47	1.31	14.3	1.68
Oats (bu.)	32.1	28.6	37.4	29.2	29.7	37.8
Potatoes (bu.)	110.4	106.1	113.4	90.4	110.5	95.5
Rice (bu.)	31.9	35.8	34.7	31.1	34.1	36.1
Rye (bu.)	15.2	13.4	16.8	16.2	16.8	17.2
Tobacco (lb.)	819.0	815.3	785.5	784.3	845.7	775.1
Wheat (bu.)	12.5	15.4	15.9	15.2	16.6	16.9

[1] Final estimate issued December 15. [2] Excluding linters.

PRODUCTION OF PRINCIPAL CROPS IN THE UNITED STATES, BY STATES, 1904–1914

(*Yearbook of the Department of Agriculture*)

	1904		1909		1912		1913		1914	
	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)
BARLEY (bu.):										
California	22.7	28,091	26.5	31,270	30.0	41,760	26.0	33,150	30.0	42,060
Idaho	37.4	1,707	40.0	2,480	43.5	6,916	42.0	7,560	38.0	7,030
Iowa	27.8	13,552	22.0	10,890	31.0	14,570	25.0	10,000	26.0	9,360
Minnesota	28.4	32,123	23.6	31,600	28.2	42,018	24.0	34,800	23.0	31,694
N. Dakota	28.1	17,518	21.0	20,727	29.9	35,162	20.0	25,500	19.5	28,275
S. Dakota	28.0	9,787	19.5	19,910	26.0	23,062	17.5	16,765	23.0	19,550
Washington	34.8	5,824	39.5	7,189	43.0	7,869	40.5	7,290	39.0	7,098
Wisconsin	30.0	14,941	28.0	24,248	29.4	24,843	25.0	18,125	27.3	18,428
CORN (bu.):										
Alabama	15.0	41,877	13.5	30,696	17.2	54,180	17.3	55,360	17.0	55,488
Georgia	11.9	47,234	13.9	39,375	13.8	53,958	15.5	63,023	14.0	56,000
Illinois	36.5	344,133	36.9	390,219	40.0	426,320	27.0	282,150	29.0	300,034
Indiana	31.5	143,396	40.0	195,496	40.3	199,364	36.0	176,400	33.0	163,317
Iowa	32.6	303,039	31.5	341,750	43.0	432,021	34.0	338,300	38.0	389,424
Kansas	20.9	134,609	19.9	154,652	23.0	174,225	3.2	23,424	18.5	108,225
Kentucky	26.9	86,815	29.0	83,348	30.4	109,440	20.5	74,825	25.0	91,250
Michigan	28.6	36,990	35.4	52,907	34.0	55,250	33.5	56,112	36.0	63,000
Minnesota	26.9	41,809	34.8	67,897	31.5	78,177	40.0	96,000	35.0	91,000
Mississippi	19.1	39,709	14.5	28,429	18.3	56,840	20.0	63,000	18.5	58,275
Missouri	26.2	151,522	26.4	191,427	32.0	243,904	17.5	129,062	22.0	158,400
Nebraska	32.8	260,942	24.8	180,133	24.0	182,616	15.0	114,150	24.5	173,950
Ohio	32.5	99,628	39.5	157,513	42.8	174,410	37.5	146,250	39.1	142,715
Pennsylvania	34.0	48,535	32.0	41,494	42.5	61,582	39.0	57,057	42.5	62,178
S. Dakota	28.1	43,855	31.7	55,559	30.6	76,347	25.5	67,320	26.0	78,000
Tennessee	25.0	80,890	22.0	67,682	26.5	88,298	20.5	68,675	24.0	80,400
Texas	22.6	136,702	15.0	75,499	21.0	153,300	24.0	163,200	19.5	124,800
Wisconsin	29.7	45,119	33.0	49,163	35.7	58,262	40.5	66,825	40.5	69,862

PRODUCTION OF PRINCIPAL CROPS IN THE UNITED STATES, BY STATES, 1904–1914—*Continued*

	1904		1909		1912		1913		1914	
	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)
COTTON (bales):										
Alabama	.36	1,448	.28	1,024	.....	1,342	.....	1,494	.....	1,750
Georgia	.41	1,888	.36	1,804	.....	1,777	.....	2,317	.....	2,713
Mississippi	.44	1,798	.31	1,083	.....	1,046	.....	1,311	.....	1,245
N. Carolina	.46	704	.42	601	.....	866	.....	793	.....	925
Oklahoma	.49	804	.29	545	.....	1,021	.....	840	.....	1,261
S. Carolina	.43	1,151	.42	1,100	.....	1,182	.....	1,378	.....	1,525
Texas	.36	3,146	.25	2,523	.....	4,880	.....	3,945	.....	4,585
HAY (tons):										
Iowa	1.62	5,074	1.64	5,983	1.40	4,952	1.48	4,440	1.38	4,071
Michigan	1.25	2,658	1.30	3,403	1.33	3,185	1.05	2,520	1.28	3,011
New York	1.36	6,480	1.05	5,002	1.25	5,900	1.14	5,358	1.20	5,584
Ohio	1.43	3,880	1.43	4,033	1.36	4,026	1.30	3,848	1.13	3,178
Pennsylvania	1.45	4,499	1.20	3,742	1.43	4,537	1.32	4,146	1.28	4,020
Wisconsin	1.67	2,959	1.53	3,625	1.60	3,600	1.62	3,848	1.75	4,462
OATS (bu.):										
Illinois	32.0	117,341	36.6	150,386	43.3	182,726	23.8	104,125	29.3	125,990
Iowa	32.0	122,323	27.0	128,198	44.2	217,818	34.5	168,360	33.0	165,000
Ohio	40.9	49,733	32.5	57,591	44.0	93,280	30.2	54,360	30.5	50,325
Minnesota	39.2	85,178	33.0	93,898	41.7	122,932	37.8	112,644	28.0	85,120
N. Dakota	37.4	31,010	32.0	65,887	41.4	95,220	25.7	57,825	28.0	64,904
Wisconsin	35.0	86,734	35.0	71,336	37.3	84,746	36.5	83,038	27.0	62,100
POTATOES (bu.):										
Iowa	136.0	22,354	89.0	12,905	109.0	18,966	48.0	7,200	86.0	12,642
Maine	215.0	19,657	225.0	29,250	198.0	23,166	220.0	28,160	260.0	33,800
Michigan	121.0	31,806	105.0	36,540	105.0	36,750	96.0	33,600	121.0	44,044
Minnesota	102.0	13,995	115.0	18,400	135.0	33,075	110.0	30,250	114.0	30,780
New York	93.0	41,129	120.0	52,560	106.0	38,160	74.0	26,640	145.0	53,215
Ohio	98.0	16,029	93.0	16,926	112.0	20,832	64.0	10,240	95.0	14,250
Pennsylvania	106.0	27,174	78.0	23,790	109.0	28,885	88.0	23,320	105.0	28,140
Wisconsin	126.0	31,499	102.0	26,724	120.0	34,920	109.0	32,155	124.0	37,696
RICE (bu.):										
Arkansas	.....	.....	40.0	1,120	37.5	3,405	36.0	3,769	39.8	3,685
Louisiana	30.4	11,445	33.8	12,675	33.5	18,812	29.0	11,760	32.1	10,802
Texas	35.5	8,314	34.0	9,894	35.5	9,429	32.0	9,696	33.8	8,102
RYE (bu.):										
Indiana	14.6	478	16.5	940	14.5	928	15.2	1,566	16.3	1,614
Michigan	13.2	1,752	15.5	5,425	13.3	4,921	14.3	5,362	16.0	5,936
Minnesota	17.7	1,648	19.0	2,280	23.0	6,026	19.0	5,700	18.8	5,245
New Jersey	17.5	1,224	16.3	1,288	17.5	1,260	18.0	1,260	18.5	1,295
New York	14.8	2,177	17.0	2,720	16.5	2,112	17.2	2,288	17.7	2,283
Pennsylvania	15.5	5,367	15.3	5,508	17.5	4,935	17.5	4,900	18.0	5,040
Wisconsin	16.2	4,905	16.3	4,727	18.3	6,240	17.5	7,438	16.5	6,798
TOBACCO (lb.):										
Connecticut	1,685	21,407	1,650	22,110	1,700	29,750	1,550	28,520	1,770	35,754
Indiana	691	4,314	950	19,000	800	14,960	750	11,925	900	12,150
Kentucky	827	229,417	835	350,700	780	343,980	760	281,200	910	364,000
Maryland	621	19,913	710	17,750	660	17,160	740	18,500	800	17,600
N. Carolina	685	98,618	600	144,000	620	110,980	670	167,500	650	172,250
Ohio	849	50,793	925	83,250	920	79,304	750	61,425	900	78,120
Pennsylvania	1,289	18,635	985	30,732	1,450	64,090	1,200	46,680	1,450	47,995
S. Carolina	703	8,185	800	32,000	700	24,500	760	33,288	730	36,500
Tennessee	730	34,823	730	53,290	660	72,600	720	64,800	820	63,468
Virginia	725	96,487	775	120,125	600	112,200	770	154,000	650	113,750
W. Virginia	710	2,901	875	12,600	760	12,008	680	10,200	820	8,856
Wisconsin	1,282	52,473	1,180	37,170	1,290	54,438	1,180	50,740	1,180	53,808
WHEAT (bu.):										
Illinois	13.8	21,542	17.4	37,831	8.3	9,819	18.7	41,888	18.5	46,250
Indiana	9.2	12,525	15.3	33,936	8.0	10,080	18.5	39,775	17.4	43,239
Kansas	12.4	65,019	14.4	77,564	15.5	92,290	13.0	86,983	20.5	117,200
Michigan	9.8	6,873	18.8	16,026	10.0	7,000	15.3	12,776	19.7	17,316
Minnesota	12.8	68,344	16.8	57,094	15.5	67,038	16.2	68,040	10.6	42,975
Missouri	17.7	27,163	14.7	29,837	12.5	23,750	17.1	39,586	17.0	43,333
Nebraska	13.6	31,453	18.8	47,686	17.6	55,052	17.9	62,325	18.6	68,116
N. Dakota	11.8	53,892	13.7	116,782	18.0	143,820	10.5	78,855	11.2	81,592
Ohio	11.5	17,563	15.9	30,664	8.0	9,760	18.0	35,100	18.5	36,538
Pennsylvania	14.1	21,857	17.0	21,564	18.0	22,320	17.0	21,862	18.1	23,747
Washington	22.2	32,140	23.2	40,920	23.5	53,728	23.2	53,300	23.5	41,840

IMPORTS AND EXPORTS OF IMPORTANT AGRICULTURAL PRODUCTS, 1904–1915

(*Yearbook of the Department of Agriculture*)

(000 omitted)

	1904	1909	1912	1913	1914	1915
IMPORTS						
Total, excluding Forest Products	$461,434	$638,612	$783,457	$815,301	$924,247	$908,185
Animal matter:						
Cattle	310	1,999	4,806	6,641	18,697	17,513
Horses	1,460	2,007	1,923	2,126	2,605	977
Sheep	815	502	157	90	532	534
Other animals including fowls	543	528	695	729	2,878	3,255
Butter	34	141	237	304	1,753	977
Cheese	3,284	5,866	8,807	9,185	11,011	9,370
Cream	.....	.....	924	1,068	1,550	1,800
Milk	32	23	62	136	1,089	2,557
Eggs	61	36	147	206	1,060	439
Silk	46,100	79,903	69,542	84,915	100,930	83,131
Wool	24,813	45,171	33,078	35,580	53,191	68,243
Packing-house products:						
Hides and skins	52,006	78,487	102,476	117,386	120,290	104,177
Meat	935	796	1,359	1,427	17,079	20,428
Vegetable matter:						
Cocoa	9,174	15,222	15,932	17,389	20,798	22,893
Chocolate	426	339	659	788	706	585
Coffee	69,551	79,112	117,827	118,963	110,725	106,766
Vegetable fibers:						
Cotton	8,541	13,622	20,218	22,987	19,457	23,209
Flax	2,541	2,542	3,779	3,950	2,870	1,876
Hemp	869	799	1,100	1,484	1,564	1,156
Jute	4,104	7,216	7,183	9,281	11,174	4,677
Manila	11,423	7,156	8,001	12,630	9,780	9,201
Sisal grass	15,935	10,215	11,867	17,804	25,861	20,572
Fruits	18,964	22,446	29,549	28,657	33,638	27,081
Corn	10	189	48	491	7,917	6,083
Oats	57	2,651	1,053	289	7,886	290
Wheat	7	36	2,213	560	1,762	470
Wheat flour	164	446	665	454	364	310
Hay	914	60	6,473	1,514	1,634	229
Hops	1,374	1,337	2,231	2,853	2,791	2,779
Distilled spirits	4,957	7,676	6,463	7,374	7,264	5,570
Malt liquors	2,313	3,215	3,280	3,290	2,967	1,587
Wines	9,391	12,276	9,591	10,079	10,117	6,247
Nursery stock	1,496	1,946	2,999	3,207	3,597	3,749
Nuts	5,471	8,664	15,828	13,966	19,783	16,820
Oils, vegetable	10,225	17,554	26,835	28,127	32,321	24,772
Rice, rice meal, etc	3,073	4,698	4,435	5,917	7,474	6,304
Sago, tapioca, etc	695	1,396	1,675	2,187	1,642	1,434
Seeds	3,587	5,958	25,642	17,426	20,084	23,055
Spices	4,366	5,348	5,974	6,187	5,596	5,927
Sugar	71,915	96,554	115,515	103,640	101,649	173,993
Tea	18,229	18,562	18,207	17,434	16,735	17,513
Tobacco	16,939	25,405	31,926	35,919	35,029	27,157
Vegetables	7,008	12,999	18,545	11,359	15,134	9,330
EXPORTS						
Total, excluding Forest Products	859,160	903,238	1,050,627	1,123,652	1,113,974	1,470,344
Animal matter:						
Cattle	42,256	18,046	8,870	1,177	647	703
Horses	3,189	3,386	4,765	3,960	3,389	64,047
Mules	412	472	732	734	691	12,726
Sheep	1,954	365	627	606	535	182
Swine	53	144	159	152	134	93
Other live animals[1]	111	114	295	452	408	203
Butter	1,768	1,268	1,468	873	877	2,392
Cheese	2,452	857	898	441	414	8,247
Milk, condensed	1,367	1,375	1,652	1,433	1,341	3,067
Eggs	396	1,199	3,396	4,392	3,734	5,004
Packing-house products:						
Beef, canned	5,882	1,645	1,303	858	462	11,975
Beef, cured	3,281	3,472	2,832	2,490	2,290	3,383
Beef, fresh	26,841	12,698	1,596	902	789	21,732
Hides and skins	3,246	1,271	3,158	3,450	2,807	4,686
Lard	46,347	52,712	52,090	58,187	54,403	52,440
Lard compounds	3,581	6,115	5,184	5,916	5,489	6,046
Pork, cured	56,268	54,046	55,239	5,699	4,897	4,911
Pork, fresh	1,669	938	297	311	359	474

[1] Including fowls.

IMPORTS AND EXPORTS OF IMPORTANT AGRICULTURAL PRODUCTS—*Continued*

(*Yearbook of the Department of Agriculture*)

(000 omitted)

	1904	1909	1912	1913	1914	1915
EXPORTS—*Continued*						
Vegetable matter:						
Cotton	$372,049	$417,390	$565,849	$547,357	$610,475	$376,218
Fruits	20,348	16,079	30,355	36,346	31,031	34,230
Barley	6,292	4,672	1,268	11,412	4,253	18,184
Buckwheat	.....	.....	.....	2	1	397
Corn	30,071	25,194	28,957	28,801	7,008	39,339
Oats	475	804	1,136	13,206	758	57,480
Rye	440	1,049	5	1,260	1,555	14,733
Wheat	35,850	68,094	28,478	89,036	87,953	333,552
Cornmeal	1,691	1,549	1,520	1,445	1,186	1,923
Oatmeal	463	516	376	1,515	569	2,406
Wheat flour	68,894	51,157	51,000	53,172	54,454	94,869
Total grain products	76,215	160,076	123,096	211,098	165,302	573,824
Hops	2,116	1,271	4,649	4,765	6,954	3,848
Distilled spirits	1,691	1,883	2,274	2,218	2,276	1,982
Malt liquors	854	1,010	1,161	1,371	1,485	1,082
Oil cake	17,069	25,836	28,229	29,444	21,668	28,879
Vegetable oils	12,618	23,098	26,909	24,044	16,251	25,832
Seeds	2,583	5,256	2,899	3,565	3,191	3,861
Sugar	532	2,785	3,681	1,681	1,840	25,615
Tobacco	29,640	30,902	43,252	49,354	53,964	44,494
Vegetables	2,603	3,760	6,544	7,354	6,936	10,813

AVERAGE PRICES OF AGRICULTURAL PRODUCTS, 1904–1915

(*Yearbook of the Department of Agriculture*)

	1904	1909	1912	1913	1914	1915
FARM CROPS:[1]						
Barley (bu.)	$0.42	$0.54	$0.505	$0.537	$0.543	$0.517
Beans (bu.)[2]	1.72½–2.20	2.25–2.75	2.55–3.10	2.15–2.60	2.10–3.10	.....
Buckwheat (bu.)	0.622	0.701	0.661	0.755	0.764	0.787
Corn (bu.)	0.441	0.579	0.487	0.691	0.644	0.575
Cotton (lb.)	0.0873	0.139	0.119	0.122	0.068	0.112
Flaxseed (bu.)	0.993	1.529	1.147	1.199	1.256	1.74
Hay (tons)	8.72	10.50	11.79	12.43	11.12	10.70
Hops (lb.)[3]	0.32–0.41	0.12–0.39	0.22–0.56	0.17–0.48	0.23–0.50	.....
Oats (bu.)	0.313	0.402	0.319	0.392	0.438	0.361
Potatoes (bu.)	0.453	0.541	0.505	0.687	0.487	0.616
Rice (bu.)	0.658	0.796	0.935	0.858	0.924	0.906
Rye (bu.)	0.688	0.718	0.663	0.634	0.865	0.839
Tobacco (lb.)	0.081	0.101	0.108	0.128	0.098	0.091
Wheat (bu.)	0.924	0.986	0.76	0.799	0.986	0.92
LIVE STOCK:[4]						
Cattle:						
Beef[5]	1.70–7.65	2.90–9.50	1.75–11.25	3.00–10.25	4.85–11.25	.....
Milch cows	29.21	32.36	39.39	45.02	53.94	55.33
Other cattle	16.32	17.49	21.20	26.36	31.13	33.38
Horses	67.93	95.64	105.94	110.77	109.32	103.33
Mules	78.88	107.84	120.51	124.31	123.85	112.36
Sheep	2.59	3.43	3.46	3.94	4.04	4.50
Swine	6.15	6.55	8.00	9.86	10.40	9.87
LIVE STOCK PRODUCTS:						
Butter (lb.)[6]	0.17½–0.28	0.25–0.37	0.26–0.41	0.26–0.38	0.24½–0.50	.....
Eggs (doz.)[7]	0.16–0.47	0.19–0.55	0.20½–0.60	0.20–0.65	0.20–0.62	.....

[1] Average farm prices Dec. 1. [2] Average wholesale prices at Boston. [3] Average wholesale prices at New York. [4] Prices per head, Jan. 1. [5] Average wholesale prices of inferior to prime beef per 100 lb. at Chicago, for the year. [6] Average wholesale prices of extra creamery butter at New York. [7] Average wholesale prices of average best fresh eggs at New York.

LIVE STOCK IN THE UNITED STATES, 1905–1915

(*Yearbook of the Department of Agriculture*)
(000 omitted)

	Number Jan. 1, 1905	Number Jan. 1, 1910	Number Jan. 1, 1913	Number Jan. 1, 1914	Number Jan. 1, 1915
MILCH COWS:					
Total, U. S	17,572	21,801	20,497	20,737	21,262
Illinois	995	1,232	1,007	1,017	1,007
Iowa	1,335	1,570	1,337	1,350	1,377
Michigan	556	936	798	798	814
Minnesota	836	1,125	1,129	1,163	1,186
Missouri	569	925	789	789	797
New York	1,721	1,771	1,465	1,465	1,509
Ohio	790	947	869	886	895
Pennsylvania	1,086	1,140	943	943	943
Texas	838	1,137	1,034	1,065	1,086
Wisconsin	1,095	1,506	1,504	1,549	1,626
OTHER CATTLE:					
Total, U. S	43,669	47,279	36,030	35,855	37,067
California	1,122	1,120	1,454	1,410	1,480
Illinois	1,666	1,974	1,228	1,216	1,180
Iowa	3,467	3,611	2,607	2,555	2,683
Kansas	2,682	3,260	1,778	1,565	1,768
Minnesota	941	1,228	1,139	1,173	1,208
Missouri	1,490	2,165	1,444	1,386	1,414
Nebraska	2,379	3,040	1,902	1,883	2,034
Oklahoma	1,284	1,637	1,155	1,097	1,119
Texas	8,249	7,131	5,022	5,173	5,121
Wisconsin	1,148	1,081	1,135	1,158	1,216
HORSES:					
Total, U. S	17,058	21,040	20,567	20,962	21,195
Illinois	1,232	1,655	1,482	1,497	1,467
Indiana	636	847	846	854	854
Iowa	1,144	1,447	1,568	1,584	1,600
Kansas	880	1,187	1,099	1,110	1,132
Missouri	809	1,005	1,084	1,095	1,095
Nebraska	795	1,045	1,027	1,048	1,038
Ohio	785	977	892	901	910
Oklahoma	354	804	758	766	758
Texas	1,277	1,369	1,181	1,216	1,192
MULES:					
Total, U. S	2,889	4,123	4,386	4,449	4,479
Alabama	161	253	270	278	281
Georgia	201	248	310	319	309
Mississippi	219	290	280	286	292
Tennessee	163	290	276	270	275
Texas	391	702	724	753	753
SHEEP:					
Total, U. S	45,170	57,216	51,482	49,719	49,956
Arizona	816	1,020	1,572	1,601	1,761
California	2,180	2,372	2,603	2,551	2,500
Colorado	1,458	1,729	1,737	1,668	1,751
Idaho	2,978	4,248	2,951	2,981	3,041
Michigan	1,759	2,151	2,139	2,118	2,033
Missouri	770	957	1,650	1,568	1,490
Montana	5,638	5,747	5,111	4,293	4,379
New Mexico	2,856	4,729	3,300	3,036	3,340
Ohio	2,601	3,203	3,435	3,263	3,263
Oregon	2,546	2,581	2,644	2,670	2,563
Texas	1,617	1,909	2,073	2,052	2,114
Utah	2,344	3,177	1,990	1,970	2,068
Wyoming	3,267	7,316	4,472	4,472	4,427
SWINE:					
Total, U. S	47,321	47,782	61,178	58,933	64,618
Georgia	1,396	1,647	1,888	1,945	2,042
Illinois	3,747	3,772	4,315	4,358	4,358
Indiana	2,631	2,578	3,709	3,969	4,167
Iowa	7,290	6,485	8,720	6,976	8,720
Kansas	1,949	1,942	2,611	2,350	2,656
Missouri	3,110	2,714	4,087	4,250	4,250
Nebraska	2,888	3,201	3,798	3,228	3,809
Ohio	2,701	2,047	3,399	3,467	3,640
Texas	2,525	3,205	2,493	2,618	2,880
Wisconsin	1,653	1,651	2,030	2,050	2,225

AGRICULTURAL STATISTICS FROM CENSUS OF 1910

(*Yearbook of the Department of Agriculture*)

	Total	Percentage
Land area (acres)	1,903,290,000	
Farms (acres)	878,798,000	46.2
Improved (acres)	478,452,000	54.5
Woodland (acres)	190,866,000	21.7
Other unimproved (acres)	209,481,000	23.8
Number of farms	6,361,502	
Average area per farm (acres)	138.1	
Average area of improved land per farm (acres)	75.2	
Farms under 20 acres		13.2
Farms of 20 to 99 acres		44.8
Farms of 100 to 499 acres		39.2
Farms of 500 to 1,000 acres and over		2.8
Value of crops of Continental U. S	$5,487,161,223	
Value of all farm property, and per cent. increase	$40,991,450,000	200.5
Value of land	$28,475,674,000	218.1
Value of buildings	$6,325,452,000	177.8
Value of implements and machinery	$1,265,150,000	168.7
Value of animals, poultry and bees	$4,925,173,000	160.1
Value of all property represented in—		
Lands		69.5
Buildings		15.4
Implements and machinery		3.0
Animals, poultry and bees		12.0
Average value per farm of—		
All property	$6,444	
Lands and buildings only	$5,471	
Average value of land per acre	$32.40	
FARM EXPENSES		
Labor:		
Farms reporting	2,922,288	
Per cent. of all farms		45.9
Cash expended	$521,727,000	
Rent and board furnished	$129,878,000	
Feed:		
Farms reporting	2,368,905	
Per cent. of all farms		37.2
Amount expended	$299,839,000	
Fertilizer:		
Farms reporting	1,823,032	
Per cent. of all farms		28.7
Amount expended	$114,884,000	
NATIVITY OF FARM OPERATORS		
Number of farms operated by—		
Native white	4,771,063	
Foreign white	669,556	
Negro and other non-white	920,883	
Percentage of operators who own their farm among—		
Native white		66.3
Foreign white		81.4
Negro and other non-white		26.2

XVIII. THE MINERAL INDUSTRIES

MINING AND ORE DRESSING

CHARLES E. LOCKE

The Mining Industry.—From a dark outlook for the mining industry early in the year 1915, the whole aspect has entirely changed during the twelve months, and, strange to say, both conditions may be ascribed entirely to the European War. It was not generally foreseen in January, 1915, that the foreign commercial demand for metals which had decreased to practically nil would be equalled and even exceeded by the foreign military demand. This demand, coupled with the deficit in European production, has been largely met by the United States and has resulted in general higher prices for most metals, and in almost unprecedented prices in specific cases. Iron and steel were a little late in getting into line, but the last half of the year showed a general boom in this branch of the industry. The general feeling is optimistic, and it is generally believed that even though the war should come to a sudden end, the demand for metals for reconstruction would still maintain prices at a fairly high level. (See also this department, *infra;* and XIII, *Economic Conditions.*)

No real suffering from scarcity of metals has been felt in this country. The fear that some materials would become absolutely unobtainable which existed in 1914, in the early stages of the war, has given way to a belief that native ingenuity will, in some way, develop resources to take the place of foreign supplies.

The prosperity of iron mining is indicated by the figures of Lake Superior shipments, which totalled 34,669,556 tons for the nine months ending Sept. 30, 1915, against 26,709,413 tons for the same period in 1914. A record of about 25 million pounds per month is being made in the Lake Superior copper district, where producing mines are being worked to capacity, old mines are being reopened and new mines developed. Lack of milling facilities has prevented an even greater production. The same conditions exist in other copper districts. The Utah Copper Co. at Bingham, Utah, which normally handles about 20,000 tons per day, has made records as high as 38,000 tons mined and 32,000 tons milled in 24 hours. In the new Ajo district of Arizona, large deposits of low-grade copper ore are being developed for production on a large scale. The Chuquicamata mine of the Chile Copper Co. is getting down to a regular production from its leaching plant, after having experienced the difficulties which inevitably attend the starting of a large scale plant employing a new process. In gold mining, the large enterprises at Juneau, Alaska, have reached the stage where one of them is actually producing and reported to be obtaining results even better than had been expected from such low-grade gold ore. At Mine la Motte, Missouri, where the lead and zinc deposits have been worked in a small way in three centuries, modern methods are now handling ore on a large scale and at a low cost.

Conditions in Mexico have continued unsatisfactory. The largest operator, the American Smelting and Refining Co., has attempted to work more or less regularly, but in October the white employees were all called out of the country and operations practically suspended. Cananea was closed down for several months, but resumed in the late summer. The year closed with a good outlook for peaceful conditions.

High prices for metals have meant higher wages, and strikes have not been so numerous as in some past years. One in the southwest Missouri zinc district collapsed after a short

period and the men went back to work at the old wage scale. Another in the Clifton-Morenci-Metcalf copper district of Arizona started in October and has become a more serious affair. The companies claim that it is the work of the agitators of the Western Federation of Miners and refuse to have any dealings with this organization. Butte, which for years has the strongest miners' union in the West, now presents the curious spectacle of having three weak unions, and the majority of the miners are now non-union (see *A. Y. B.*, 1914, p. 423.)

Mining Methods.—In the technique of mining, the following tendencies are noted. Acetylene lamps are rapidly displacing candles and oil lamps, both in coal mines and in metal mines. A satisfactory electric lamp is now on the market for use in mine-rescue work, especially in coal mines. Open-cut methods are being applied to coal seams which are sufficiently near the surface to warrant the removal of overburden. Mining companies are more and more appreciating the value of a geological staff to advise both in prospecting and in mining. Flat ropes for hoisting are losing ground. Hoisting engines are being built to work more economically; in bringing the load to rest, a hoist driven by compressed air temporarily becomes a compressor, and the motor of an electric hoist temporarily becomes a generator, so that in both cases power is given back into the system instead of being dissipated through the medium of a brake. For haulage locomotives, the electric-trolley, the electric storage-battery, the compressed-air and the gasoline types are all in use. Each has its advocates and each has its points of superiority, which depend to a considerable extent upon the conditions where it is installed. Delay action exploders operated by electricity instead of fuses and caps are used in some mines and much liked. One-man drills are gaining all the time. The hollow steel type, which delivers a stream of water to the bottom of the hole and prevents dust, has led some mines to install a complete water system, and it is predicted that some states at least may make such installation compulsory. Rotary drills for oil wells are much used in California. Metal mines are following the lead of coal mines in the "safety-first" movement, and in the development of "first-aid" teams and contests.

Ore Dressing.—In ore dressing, oil flotation overshadows all other improvements. All districts are using it and over 50 installations have been made in the United States alone, ranging all the way from the 20,000-ton mill of the Utah Copper Co. down to small experimental units. Large mills like the Utah Copper, Anaconda, Ray, Chino and Nevada Consolidated are being entirely rearranged at considerable expense to install flotation at the fine end. The new Inspiration mill, which will ultimately handle about 14,000 tons daily, treats all the ore by flotation to save fine mineral first, and then uses concentrating tables to recover the coarse mineral. In the Cœur d'Alene district of Idaho practically every mill uses flotation on slimes, and in the southeast Missouri lead district, every mill has flotation. The milling capacity of this latter district is about 15,000 tons daily, of which about 2,000 tons are slimes going to flotation. Conservative estimates are that these slimes assay three per cent. lead, of which 80 per cent. is recovered at a cost of 15 cents per ton. If this lead is worth two cents per pound in the form of concentrates, then oil flotation adds $1,500 daily to the net profits of the district. Three different forms of apparatus are used, the Minerals Separation, the Janney and the Callow. The first two agitate mechanically, while the last uses compressed air. Over 25 licenses to operate have been given on the American continents under the Minerals Separation patents. Flotation litigation during the year has been confined to the Minerals Separation-Miami suit which is still going on (*A. Y. B.*, 1914, p. 492). Considerable study has been given to the fundamental theory of flotation, and certain facts point to the possibility that the separation is due to the action of fine particles bearing electrostatic charges. It is possible that in the future oxide ores may be treated as well as sulphides. Even at the present time, the Utah Copper Co. is able

to float some oxidized copper minerals along with the sulphides. Experiments at Lake Superior have successfully floated native copper. As yet, however, flotation is all rule of thumb, and no way is known of determining the best conditions for a particular ore except by experiment. Selective flotation for separating sulphides of different metals from one another is not yet commercially successful on the whole, but it is believed that the problem will be solved. Flotation has caused the ore-dressing plants to use finer grinding, since it makes slimes no longer a bugbear. Certain coal tars have been shown to be good floating agents. The problem of dewatering the finer flotation concentrates is best solved by Dorr thickening tanks coupled with either Kelly or Oliver filters, although some mills still use settling tanks and steam drying.

In crushing, jaw breakers as large as 66 by 86 in. of mouth opening have been made and are preferred to large gyratory breakers on account of their simplicity. The Marcy ball mill, which is a new machine of the short tube-mill type, is finding much favor. Steel or iron balls are being successfully used in the place of flint pebbles in tube mills.

COAL, COKE, AND PETROLEUM

R. Dawson Hall

The Coal Industry and Labor Troubles.—The year 1915, in relation to the coal business, divides itself into two parts, the first a period of stagnation of trade and fierce competition and the last one of steady demand and improved prices. When the year opened the eastern Ohio strike was still in full swing. The miners were demanding a run-of-mine rate of 47 cents per ton, a figure which represented the equivalent of the price which, before April, 1914, had been paid for the lump coal only, the percentage of slack and lump taken to obtain that figure being the average for the whole of Ohio. The eastern Ohio operators urged that the equivalence should be based, not on the slack percentage of the whole state, but on that for eastern Ohio. They declared, in effect, that as the southern Ohio field had been making less slack, the miners had always been paid a higher wage in that section, that the higher remuneration was rendered possible by the better quality of the coal, and that the equivalent demanded by the United Mine Workers of America lowered the cost of coal in the Hocking Valley and raised it in eastern Ohio. On the other hand, the union leaders declared that they would not concede anything and pointed to the agreements signed by almost all the other operators, except those in eastern Ohio, which required them to sign up with all sections of the state on a basis of 47 cents per ton. This deadlock continued till May, 1915, when the miners' union conceded certain other points than the cost per ton, insisting, however, that there was no concession of fundamentals. The modifications of these points in the scale, however, induced the operators to sign the agreement after a strike of 13½ months, and work has continued since, broken occasionally by strikes to hasten the agreed installation of run-of-mine scales and to provide more liberal terms in the payment of arrearages in house rent. In the southern part of the state, however, the Sunday Creek Coal Co., a large Hocking Valley corporation, closed down completely, alleging a failure on the part of the union to keep its agreement in eastern Ohio. Other companies worked intermittently until the general improvement of trade made it possible to work everywhere regardless of scale.

Later, attempts were made by the union and operators to compel the Ohio railroads to charge a lower ton-mile rate and one more nearly equal to that paid for the transportation of West Virginia coal. The railroads hauling coal west from West Virginia decided to ask the Interstate Commerce Commission for permission to raise their freights 15 cents per ton, on coal traveling in the direction indicated, a readjustment more favorable to them than lowering Ohio rates. The threatened change has caused much heartburning between the states

and meantime the unsettled condition of labor has made it necessary for the union and the citizens of Ohio, especially the former, to expend large sums of money to relieve the destitution. Both miners and operators as a result have moved to West Virginia and Kentucky where the lower wage scale, the absence of the run-of-mine law, the better coal and lower ton-mile rates seemed to make operation more feasible.

In Illinois and Pennsylvania business reached an extremely low ebb but forecasts were always cheerful, since the war was reducing the number of laborers while increasing the demand for coal, and the coming haggling over the wage agreement early in 1916 was certain to make everybody increase winter stocks of fuel.

Coal Mining.—Some growth in the use of air and electric hammer drills in coal mines both in rock and coal has been noted during the year, but the progress has been slow owing to the fact that the drilling of coal rarely requires much labor and each miner has but a few holes to drill. Steel ties are making much headway, and the use of spring rigging on mine cars to reduce resistance on starting is another innovation. The Bureau of Mines, partly to aid the industry in the selection of suitable electric lamps and partly to avoid having to approve lamps which are safe but not sane, has decided to grant certificates covering safety, practicability and efficiency. Three types of lamps have already qualified.

Petroleum.—The fall in the price of oil which marked the close of the year 1914 continued in 1915. Pennsylvania crude, which in April, 1914, was at $2.50 per barrel, dropped to $1.35 in May, 1915. For a long time it continued at that quotation, but from August onward it rose and at the end of the year it stood at about $2. The depressing feature was largely the remarkable production of the Cushing field in Creek County, Oklahoma. That field, while not the most important so far discovered, was so diligently exploited that in July R. H. Johnson and L. G. Huntley declared in a paper before the Engineers' Society of western Pennsylvania that the "pool had produced at the rate of 75,000,000 bbl. annually—more than was ever produced during a similar period by Baku in Russia, Midway in California, Spindle Top in Kansas, Glenn in Oklahoma, Macdonald in Pennsylvania, the Juan Casiano in Mexico, or the Dos Bocas flow in the Mexican fields." But the pool could not long stand the strain put upon it. In June it was producing 300,000 bbl. and in September only 150,000 bbl. The Bartlesville sand was losing its pressure and the shallower Layton sand was being drilled in lieu of that which had formerly given such excellent results.

It was pools like Cushing and Healdton which prevented the war from aiding the oil market. The sustaining qualities of the war demand were, of course, quite unequal. There was a big demand for gasoline but no great call for kerosene.

Much interest has been aroused by a discovery of oil in Montana. An Oil Industry Association has been established in California to endeavor to obtain a revision of the laws relating to the patenting of oil lands.

Natural Gas.—Gasoline demand is being partly met by the casing-head material, prepared not from oil but from gas (see also XXIV, *Industrial Chemistry*). By cooling the gas at the well and by compressing it large quantities of gasoline can be obtained from "wet gas." The condensate thus resulting tends to evaporate unduly and to prevent this action the liquid is blended with naphtha. Some gas like that in the Hogshooter field of Oklahoma is almost wholly methane and from such gas little condensate can be obtained. It appears that wells which have lost some of their pressure have a larger output of condensate than those in their prime. The liquid condensate consists of various paraffins, ethane, propane and butane. These are probably gaseous even under the pressures at which the gas is found in the rock strata, though butane may sometimes be liquid. (See "Condensation of Gasoline from Natural Gas," by G. A. Burrell, F. M. Seibert and G. G. Oberfell, U. S. Bureau of Mines.)

An interesting bulletin issued by the Bureau of Mines deals with the

"Composition of the Natural Gas Used in 25 Cities" (G. A. Burrell and G. G. Oberfell). The heating quality of the gas at 0° C. varies from 730 B.t.u. per cub. ft. at Fort Worth, Tex., to 1,312 at Alma, N. Y. In the former the ethane content is 10 per cent. and in the latter 31.1 per cent. The gas from individual wells has an even higher value; one in Kentucky showed 69.7 per cent. of ethane and a heating value of 1,548 B.t.u. per cub. ft. at 0° C. and 760 mm. pressure.

IRON AND STEEL

J. E. Johnson, Jr.

Effects of the European War.—It is not possible to deal with the development of the iron and steel industry in 1915 without touching at the outset upon the European War, which has exercised such a predominating influence upon it, first, directly, by cutting off or seriously diminishing the supply of auxiliary materials used in the steel business, notably ferromanganese, ferrochrome, ferrosilicon, ferrotungsten, magnesite bricks and the like; and second, indirectly, by its effects in first leaving the iron business stagnant in the almost universal business depression which was the first result of the war, and then suddenly, almost without warning, overloading it with a volume of business such as the iron and steel industry never saw even in the palmy days of 1907. A notable event illustrating this is that the country exceeded in October for the first time a production of three million tons of pig iron per month. (See also XIII, *Economic Conditions;* and XIX, *Manufactures.*)

The extreme depression of the early part of the year and the terrific stimulation of the latter part, have been alike unfavorable to technical development. During the first period the industry was too poor to expend the funds necessary for development, and in the latter it has been so swamped with rush orders that the trained personnel ordinarily available for such development have been taxed to the utmost to maintain production at the maximum, and as a result the technical progress during the year has been very slight.

Ore Supplies.—The country's principal source of iron ore, the Lake Superior region, has reflected the condition of the industry as a whole. During the early part of the season demand was slight and the work on the ranges very slack in consequence; during the latter part of the season it has been a matter not of how much ore the producer could sell but how much he could deliver before the close of navigation. (See also *Mining and Ore Dressing, supra.*) The year has seen also the beginning of shipments of ore on a large scale from the west coast of South America to the United States through the Panama Canal.

The interest in large deposits of lean magnetite which began to revive several years ago has grown rapidly throughout the year, and deposits of eastern Pennsylvania, New Jersey and New York are now the subject of much interest, especially in view of the general realization that the central Atlantic ports are strategic points for the production of iron and steel. With the interest in magnetite deposits has gone an increasing interest in methods of beneficiating such ores. A plant considered by its owners experimental, but as large as some small commercial plants, has been running for a year or more in Canada, applying the Gröndal processes of wet magnetic concentration after fine grinding, briquetting under pressure, and burning in a tunnel furnace. But in this case, as in that of almost every European invention imported to this continent, some of the details which were adopted in Europe have not proven satisfactory here, and methods for forming the briquette have been devised which are simpler and cheaper and yield a far larger and stronger product. These methods are now undergoing commercial development.

Coke.—In the coke industry is felt perhaps a more direct reflex from the effect of the war than in other departments of the iron business. The enormous demand for explosives

which can be made only from the benzol family of hydrocarbons has resulted in the price for this by-product of the operation of coke ovens being increased four, six, eight or ten times. The rapidly growing realization that by-product coke can be made not only as good as, but better than beehive, and from a vastly wider range of coals, united with the demand for by-products, is bringing the by-product oven into its own at a rapid rate. (See also XXIV, *Industrial Chemistry.*) With this development in the production of coke has gone increasing interest on the part of blast-furnace operators in the questions affecting the quality of the coke for their purposes. Discussions have been held, investigations have been set on foot whose end will not be in sight probably for years to come, and the iron industry seems at last in a fair way to obtain definite knowledge in a field where there has been in the past only dense ignorance.

The Blast Furnace.—The hot-blast stove is probably the portion of blast-furnace equipment which has received the most attention during the year. Tests of various kinds have been made, tests for stove efficiency, for the conductivity of brick, for temperature of combustion, for temperature of waste gases, etc. New burners have been brought out and are being vigorously pushed on the claim that they give better combustion, and new checkers have been designed to give more surface in those cases where clean gas permits their employment. The subject of heat insulation, which has lain dormant for half a century, has been brought to the front, and new insulating materials only recently introduced in this country have been eagerly seized upon as offering a means to stop radiation and conduction losses. Similarly the loss of temperature of the hot blast while passing from the stoves to the furnace has been investigated and insulating material has been used between the fire-brick lining of the hot-blast main and its steel shell.

No new types of furnace have been brought out. The thin lined furnace is slowly but apparently surely passing from favor, hearth and bosh construction have become about standard. The tendency is more and more to very large hearths with very short, steep boshes. Fire brick both for stoves and for furnaces is, like coke, receiving the attention which it has long deserved but has never received in any adequate degree until recent months.

In blowing equipment no radical changes have occurred. The gas engine has made some progress, as has the turbo-blower, but the largest plant built during the year will be blown with steam engines. In boilers no radical changes have been made, but at the largest plant building very high pressure is used in combination with superheat, probably for the first time at a blast-furnace plant.

The Croxton system of handling slag has made good progress. This consists of running it direct from the furnace on beds of broken slag with heavy chains buried just below the surface at intervals of two or three feet. The bed is surmounted by a travelling crane equipped with both hoist and clam-shell bucket. The crane takes hold of the projecting end of one chain after another and pulls it up through the bed of slag, this breaks the slag into pieces of a size which the clam-shell bucket easily and quickly removes, producing a material excellent for concreting or road-building purposes.

Steel Making.—The general subject of making steel both better and quicker has undergone more development during the year than for a long time previously. For many years we seemed to be bound to the idea that there were but two methods of making steel, the Bessemer and the open-hearth. Within the last few years duplexing by the use of both of these apparatus in series, in the order given, has been practiced, and within the year triplexing has been worked out on a commercial scale for high-phosphorus irons. Triplexing is of two varieties as regards the last step; in one case the final element is a second open-hearth furnace and in the other an electric furnace. Steel has been produced by these methods of a quality which would have been considered impossible as a commercial product a few years ago.

The electric furnace has made steady progress. The things which seemed to be practically impossible for it a few years ago are now being accomplished, and while even its backers probably no longer believe that it is to replace the blast furnace for the production of pig iron, there is little room for doubt that as one step in making steel on a large scale and as the sole step for melting steel for casting purposes, it will come to have a great development. (See also XXIV, *Electrochemistry.*)

The lack of auxiliary materials and deoxidizers, to which allusion was made at the beginning of this article, has been a very serious matter. The United States produces only an insignificant amount of the manganese ore which she consumes, and during the year other sources have been entirely shut off by the war or shipments from them to America have been very seriously curtailed by the almost prohibitive prices to which ocean freights have risen. Hence there has been a continuous shortage of ferromanganese throughout the year. As result spiegeleisen has come again into general use. The development of the open-hearth furnace and the curtailment of the production of rails had left spiegeleisen almost a drug on the market for several years past, but in 1915 all that could be produced has been sold at prices many dollars in advance of those prevailing a year ago. The consumption of ferrosilicon is much smaller than that of ferromanganese and there being no limit to the amount of raw material available, the shortage in ferrosilicon has not been so acute; it is still severe, however, because the electric furnaces on this continent have not the capacity that the demands required. Chrome ore being produced mainly in Turkey, the supply has been entirely cut off by the war and the price of ferrochrome has gone up many fold in consequence. The same is true in a general way of tungsten. The impossibility of obtaining the magnesite which has hitherto been produced almost entirely in Austria has proven a very serious impediment to the manufacturers of refractories and to their customers in turn. The same applies in a lesser degree to silica brick of a certain quality. (See also XXIV, *Electrochemistry.*)

Steel Rolling.—One of the aspects of the trade brought out by the war has been a lack of rolling capacity for large sizes. Shrapnel bars, which range in size from 3¼ inches in diameter up, could only be rolled advantageously at large mills, generally used for rolling rails, and as the specifications, inspection, etc., of these bars have been so severe as to require the scrapping and remelting of about one-half of the product, the salable product of the mills has been greatly reduced. American manufacturers brought face to face with the stringent requirements of artillery specifications have been made to realize that the advance in the selling price of shrapnel bars over ordinary bars does not represent profit exclusively by any means, most of the apparent profit being absorbed in reduced capacity, rigid inspection, and the necessity of remelting practically 50 per cent. of their output. The manufacturers, however, had very little trouble after the first few trials in making materials to the specifications required.

Cast Iron.—Active interest in the subject of cast iron continues. The most notable development of the year has been the introduction of the Stoughton oil-burning cupola. This was devised primarily for the purpose of substituting oil for coke in melting pig iron, with the idea that as higher efficiency can be obtained in the burning of oil, the fuel cost of remelting would be reduced. These expectations were thoroughly fulfilled, while the astonishing result of the first trial was to prove that the increase of sulphur in the molten product, instead of being about 0.05 per cent., as it is with coke, was only about one-fifth of that amount, a decrease of vast importance in the sulphur content of the molten iron as compared with coke melting; this is vastly more important than the fuel saving. At least one cupola of this type has been in operation for several months and the pioneer stage is therefore safely passed through. There has been, in fact, no trouble with the new process, even in the hands of people entirely unfamiliar with it.

Commercial developments of considerable importance have occurred in the use of coke pig iron oxygenated after leaving the blast furnace, thereby converting it into, not a substitute for, but an improvement upon, charcoal iron. This material, named for its inventor "Johnson Iron," has been used in many of the roll foundries in competition with the high priced southern and eastern charcoal irons and has given unfailing satisfaction. Developments are now under way whereby it is expected to use this process for the direct production of castings of the highest quality at the blast furnace without the necessity of remelting.

The Iron and Steel Industry.—In general it may be doubted that history will ever repeat itself so as to bring about again such a year in the iron industry as 1915, with its profound contrasts of famine and surfeit. The desperation in the early months to find a market for the irreducible minimum production which would keep the mills turning, the sudden change to a surfeit of orders, the sudden disappearance of any adequate supply of imported auxiliary materials, and last but not least, the accompanying changes in the market for tools and equipment, have crowded the year with remarkable interest.

A feature of the situation in a trade closely allied to the iron trade has been the market for machine tools. A little more than a year ago a manufacturer of lathes is said to have had about seven hundred of these tools stacked up unsold and unsalable under the existing conditions. When the demand for machinery for manufacturing shrapnel and high-explosive shells swept over the country these tools were sold almost overnight; the works have since been running night and day and yet are to-day a year behind their orders. The same thing is true in different degrees of other lathe manufacturers. Immediate delivery of presses used in the manufacture of cartridges and brass shell cases for shrapnel, and other tools of this type in large quantities virtually cannot be had at any price. The result has been that "special-purpose" lathes have been brought out suitable for machining shrapnel and other shells of limited size but without the many refinements necessary on a good engine lathe. (See also XXI, *Mechanical Engineering.*) Naturally the machine-tool business as a whole has become immensely prosperous, tools of all kinds to make other tools being in enormous demand. This in turn has made a demand for castings and the foundries have been called from a state of dullness to supply work entirely beyond their capacity for early delivery.

With all this prosperity there have been elements to the situation by no means gratifying to the iron and steel industry. Zinc, whose principal market in times of peace is for galvanizing and which commands a price in peace times of about 5½ cents per pound, came into such enormous demand for brass cartridge manufacture that the common grade of spelter containing one to two per cent. of lead went up to about 25 cents per pound, while pure zinc suitable for cartridge manufacture, which sold at 7 cents or lower a little over a year ago, soared for weeks around 40 cents per pound and finally came to rest at a price of about 32 cents (see also *Zinc, infra*). The result has been that the cost of galvanized material went up enormously and manufacturers made as little as they could of it, recommending their customers to take black sheets and paint them rather than pay the galvanizing price. Tin has also experienced a heavy increase in price which is bearing hard upon the users of tin plate, but this is not caused by its use for war material but by the interruption of commerce, high ocean freights, and general derangement of business in the countries from which we import it.

COPPER

L. S. Austin

Concentration of Low-Grade Ores.—Most of the higher-grade copper ores are exhausted, and the remaining copper deposits, being low-grade, must be worked on a big scale by great companies. Such ores, carrying perhaps

one to four per cent. of copper, consist of barren rock with scattered mineral particles. The chief problem is therefore cheaply to concentrate into small bulk the mineral worthy of treatment. Ore of 1.5 per cent., or 30 lb. of copper per ton, can be concentrated for 35 cents per ton by water concentration methods, but with a recovery of, say, only 20 to 22 lb. Still at the present price of copper there still remains a large profit in water concentration. The defect of water concentration is that in regrinding there results much watery mud or slime, so fine that the mineral, despite its greater gravity, will not settle out from the rest and so all floats away as waste.

The Flotation Process.—By the flotation process this loss of eight or ten pounds of copper per ton may be largely diminished, and the method has but recently come in vogue for treating original ores. When a watery pulp of finely ground ore to which two or three pounds of mineral oil per ton and some acid have been added is agitated violently by mechanical means or by air in a suitable vessel, there rises and floats on the surface a foam or froth. This froth has picked up the mineral particles but not the sandy waste matter. The froth containing the mineral is skimmed off, the waste matter or gangue sinks, to be discharged from the bottom of the tank. As the skimmed-off froth condenses in a separate vat, the mineral particles sink to the bottom to accumulate as a mud. This "concentrate" is filtered by a mechanical filter, leaving a moist final product ready to be smelted. Flotation is a new step in the metallurgy of copper; its only rival is leaching, and for sulphide ores (and they are the prevailing ones) flotation is cheaper, though for oxidized ores it has not yet been developed on a commercial scale. (See also *Mining and Ore Dressing, supra.*)

Concentrating Tables.—The well-known Wilfley table, with its reciprocating end-shake, has its surface furnished with parallel riffles forming corresponding shallow grooves. Butchart has put a reverse bend into the riffles and so has largely increased the capacity and the range of sizes worked. This has simplified the whole mill system. The plan is to crush the ore to 5 mm. (nearly ¼ in.) in size and to treat the product on this new type of table, thus eliminating a number of trommels, classifiers, jigs and elevators. The tables yield concentrate for smelting and a tailings product which, after fine grinding, receives flotation treatment; this takes out most of the remaining sulphides. The employment of this system means that it should be possible to double capacity under the same roof, or to construct new plants at about half the expense of the older methods.

Leaching of Sulphide Ores.—The larger-scale leaching of sulphide ores of copper is now being employed, using well-known methods. At one large works a plant of 2,000 tons daily capacity is treating accumulated tailing sands formerly rejected in water concentration, containing 0.5 to 0.65 per cent. copper and 3 per cent. sulphur. The sand, dropped from 50-ton hopper-bottom cars upon a belt-conveyor, goes to storage bins. From these bins it is drawn as needed upon other conveying belts to circular multiple-hearth roasters of the Wedge-MacDougal type. Here, using some coal, the sand is given an oxidizing roast, which brings the copper mineral (and some of the iron also) into forms that can be dissolved by sulphuric acid. The calcined material is carried by belt to the leaching building where there are ten percolation tanks each 50 ft. in diameter. One tank is filling, another emptying, so that eight are being leached and washed. In the first step of the order of treatment, 250 tons of a solution containing 5 per cent. of acid and 8 per cent. of salt is flowed upon the charge. This drains through the ore to a copper-solution tank and thence to vats or boxes containing scrap-iron. The copper is here precipitated in metallic form by the iron, and from time to time removed from the vats (by use of a hose jet) into a settling tank, there to be drained and collected for smelting. Next, 150 tons of a solution to which is added acid to bring the solution up to 20 per cent. is flowed upon the ore so that the remaining copper shall be dissolved. Finally two washes of clear water are

given to remove the remaining soluble copper salts.

A new 250-ton plant in Nevada will treat both sulphide and oxidized ores. The sulphide ore is treated by sulphuric acid to dissolve the contained copper (and iron) sulphide, and the solution passed through vats containing scrap iron for the recovery of the copper. The remaining iron sulphate solution is concentrated by evaporation and the iron-sulphate crystals separate out. These crystals are dried and roasted, when they yield iron oxide and sulphur trioxide gas (SO_3). The gas, with addition of water in absorption towers, furnishes sulphuric acid for use in the leaching process. (See also XXIV, *Electrochemistry.*)

Smelting.—The reverberatory furnaces, described in the YEAR BOOK for 1914 (p. 485) are now fully in operation. They are 23 ft. 4 in. wide by 144 ft. long, inside dimensions, and smelt 650 to 700 tons daily with a consumption of 14 per cent. of powdered coal. The roof near the fire end is 25 in. thick at the spring, 20 in. at the crown, and falls off to 20 in. and finally to 15 in. in thickness at the front. The charge hoppers extend the full length of the furnace on each side and across the firing end. From them come down through the roof 6-in. pipes at every 26 in. and the charge materials enter the furnace along the walls. The ore is kept banked up at the walls sloping thence toward the center, and the supply is maintained as fast as the ore melts. The melting is chiefly in the hottest zone, the half of the furnace toward the fire end. Banking the walls in this way protects them from erosion, though wearing away occurs at the spring of the arch, hence the thickness of brick at this point.

At Anaconda a reverberatory furnace is being installed at the end of the converter plant. It will have the duty of smelting the molten reverberatory slag, the by-product residue and a quantity of calcine and ore. The slag flow from this furnace will be granulated and the matte will be withdrawn for immediate treatment at the converters. It is interesting to note that at this plant the old type of barrel converter is being replaced by the Great Falls upright 20-ft. type.

Precipitation of Flue Dust.—The Cottrell system of electrostatic precipitation is making headway, especially for the recovery of the richer flue dust from the converters and from roasters treating fine flotation concentrate. Two systems are used: (1) vertical pipes with axial wires, (2) vertical corrugated sheets with equally spaced small chains hung between the sheets. A high-pressure direct current of 30,000 to 60,000 volts is used, which creates an electric field around the wire or chain, and the dust particles are repelled, attaching themselves to the nearby surfaces. From time to time a group is cut out from the main system and the pipes or sheets shaken, when the dust drops to the bottom, to be drawn off at leisure.

GOLD AND SILVER

HERBERT A. MEGRAW

Disturbing Factors in the Industry.—The year has been one of peculiar conditions for the gold and silver industry. There are several reasons for this, and they have all tended to disturb the balance of production of the two metals. The European War is, of course, primarily responsible for most of the disturbance. Its effect has been to diminish seriously the demand for silver, and consequently its price has been at a low point during most of the year. In December, however, sharp buying for coinage in Europe and India forced the price above 50 cents per ounce and settled it in its normal channel. On that account no new industries of large size have appeared, while some small plants, operating on close margins, have been obliged to curtail. With gold the situation is just the opposite. The demand for it has been extraordinary, since it is needed to pay the world's debts. Consequently the gold mines have been working at their utmost capacity, and even new ones have been started.

Mexico has provided the second disturbing factor in the gold and silver

field. Political conditions have been extremely bad in that country throughout the year and production has been even less than in 1914. In view of the fact that Mexico is, in normal times, the world's largest silver producer, its practical disappearance from the field makes an enormous difference in the total. Were it not for the fact that the European War has made the demand for silver so very much less, the Mexican situation would have, in all probability, led to record prices for the metal.

The third disturbing factor is the change in the metallurgy of the two metals. Flotation is becoming an extremely important factor, and one that will have to be seriously considered. Sulphide slimes containing gold and silver will probably be more and more extensively treated by the flotation process as it is developed. Even at the present time one mill, the Hudson, at Idaho Springs, Colo., has actually abandoned cyaniding in favor of flotation. The retarding factor of flotation is the state of litigation over ownership of the process, which effectually prevents dissemination of information. (See also *Mining and Ore Dressing, supra.*)

Production of Gold and Silver.—The gold production of the United States in 1914 amounted to $92,823,500. In silver the production was 67,929,700 fine ozs. California produced the most gold, its value being $21,427,800, a slight increase over its production in 1913. Colorado, Alaska and Nevada followed in the order mentioned. In silver output Nevada ranked first, having produced 14,814,200 fine ozs. Following in the order of rank came Idaho, Utah, Montana and Colorado. It is probable that both the gold and silver output for 1915 will change but little, the gold increasing and the silver decreasing.

In South Africa work has been continued steadily throughout the year. There have been no strikes or other disturbances aside from the small taste of war with the near-by German colonies. Gold production has been pushed to the utmost, and the year's total will probably reach 10 or 15 per cent. above the 1914 mark.

In Mexico the producers have had plenty of trouble. As long as supplies were available and the plants remained immune from attacks by brigands it was possible to earn even more money than when times were normal. The scarcity of occupation for the natives led to their turning to mining on their own account, reworking old dumps, small mines and even robbing mines that had been temporarily abandoned by foreign owners. The ore was sold at very low prices to the companies operating mills, these being the only ones with capital enough to finance the deals, and the result was a material increase in their earnings. Unfortunately most of these operators have now been compelled to suspend operations, since through destruction of railroads and their use for military purposes there has been no way to secure the needed supplies or to assure the safe export of bullion produced. Most of the mills are now entirely idle. The recent recognition of the Carranza faction and the embargo upon munitions of war to other leaders is expected to have an important influence upon the industry, but unless there is some modification of the taxes that Carranza proposes to levy upon the mining business, it is likely to disappear entirely.

Discovery and Exploitation.—Among the sensations of the year, the bonanza of the Jumbo Extension, at Goldfield, was the leader, although closely followed by the pocket uncovered at the Cresson mine in the Cripple Creek district. The Homestake mine, in South Dakota, continued its large-scale production. A total of 1,587,774 tons was mined in 1914, according to the last report. The total value of the bullion yield was $6,160,161, or about $3.88 per ton. The per-ton yield is somewhat less than in former years, but costs have been somewhat reduced and metallurgical improvements have been made. The Homestake continues to be the greatest gold mine in the United States.

The United States has been producing about $90,000,000 of gold per year, a great part of which comes from the smelting of copper and lead ores. Of ores worked purely and simply for gold there are about 10,000,000 tons yearly. It is of interest to compare these data with the esti-

mates of production of the three large companies of Juneau, Alaska. A total production of 12,000,000 tons yearly is contemplated, yielding about $18,000,000. At present only the plant of the Alaska Gastineau has started, and only one unit of that mill is in operation. The production of the district will be materially increased in 1916.

The Iditarod dredge of the Yukon Gold Co. has averaged more than $1.47 per cub. yd. since starting in 1912. Dredging in 1915 has occupied about the same relation to general gold mining as in former years. New dredging fields have not been discovered, with the exception of some areas in the Philippine Islands which have been proved profitable.

As to new discoveries in the United States, the camp of Willard, named in honor of the fistic champion, has been opened in Nevada, and there seems to be some chance for its development into a profitable camp. Tonogold, also in Nevada, has not made much progress during the year, but cannot yet be called a failure. Rochester, the discovery of only a few years ago, is now on a permanent basis and is producing like a veteran. In Canada the discovery of payable gold at Kowkash, in Ontario, points to a widening of the profitable mining area in that already important province.

In the Cobalt district, of Ontario, silver production has been kept up at a normal rate. The Mining Corporation of Canada, controlling the Townsite, City of Cobalt and Cobalt Lake properties, started a new annex to cyanide all the slimes from its mills. At Porcupine, the Hollinger has increased its milling capacity to 1,600 tons per day, and is treating, beside its own ores, a large tonnage from the Acme property, adjoining. The latter is fast becoming one of the great mines of Canada, which the Hollinger already is. In British Columbia there has been practically no change in the production or its details.

A new claimant for honors in gold mining is the Eiderlinsky gold mine, near Eiderla, Russia, about 130 miles southeast of the Ural range.

Gold and Silver Milling.—The Knight-Christensen mill, at Silver City, Utah, was burned, the loss being $75,000, with no insurance; losses of this kind have fortunately been rare. The Rockland mill of the Pittsburg-Dolores Mining Co. completed its cyanide plant during the year and is now operating. The Elko Prince, at Elko, Nev., is building a cyanide-treatment mill using Dorr machinery principally.

The old Virginia City camp continues about the same. The Mexican mill has been running throughout the year, but has had to call in some assistance in ore tonnage from outside mines. The mill of the Tomboy Company, near Telluride, Colo., has been completed. This is an important addition to the cyanide plants of the state and its operation will be watched with interest.

LEAD

H. O. Hofman

The year 1915 has shown only one radical change in the treatment of lead ores. The war having stopped almost wholly scientific investigation of the metallurgical processes dealing with lead, the records deal mainly with descriptions and improvements of practice.

Ore Purchasing.—An interesting pamphlet by Prof. Charles H. Fulton entitled "The Buying and Selling of Ores and Metallurgical Products" is published by the Bureau of Mines (Tech. Paper 83). There are three general methods for buying lead ores. Payments are made (1) by the unit and at quotation, a system used chiefly in Colorado; (2) for 90 per cent. of the lead content at sales price with a deduction per pound, a system used chiefly in Utah, and (3) for 90 per cent. of the lead content at 90-95 per cent. of the sales price, a system used to some extent for Idaho ores. The fire assay or the wet assay less 1-1.5 per cent forms the basis of valuation. The price in all three cases increases with the amount of lead in the ore; there are penalties for the presence of undesirable elements.

Mechanical Ore Hearth.—The problem of a satisfactory mechanical rabbling device for the ore hearth has been solved by E. Newman at the works of the St. Louis Smelting and Refining Co. (*Bull. Am. Inst. Min. Engrs.*, 1915, p. 2139.) With suitable ore, the ore hearth can be operated at less cost per ton of lead produced than the blast furnace, but working conditions are severe and unsanitary, owing to the requirement of almost continuous hand rabbling and exposure to fumes. The device designed by Mr. Newman imitates very closely the motions of hand rabbling; the results obtained have been entirely satisfactory. The length of the furnace, formerly limited to five feet, has been increased to eight feet without loss in efficiency; in fact the results obtained exceed expectations.

Smelting Plants.—The lead-smelting practice at the El Paso (Texas) smelting works has been described by H. F. Easter (*ibid.*, p. 1493). The smeltery is operated strictly on a custom basis; the source of ore supply is New Mexico, Arizona, western Texas and northern Mexico. The supply in recent years has been uncertain, and has shown a tendency toward excess in SiO_2 and a corresponding shortage of iron. The latter difficulty has been met by using roasted leady copper matte and converter slag from neighboring smelteries as fluxes. Unfortunately the introduction of copper from these sources has complicated the smelting practice. A crew of four men is usually required for unloading a car. Sampling is carried on first at the car by the shovelers, who reserve one tenth of the fines and lay aside lumps over 6 in. in diameter to be crushed and then sampled mechanically in Vezin machines. The sulphide ores are roasted in Godfrey mechanical roasters. The best results are obtained with a mixture of ore and leady copper matte. A furnace has a capacity of 30 tons in 24 hours; it reduces the sulphur content to 10-12 per cent. The roasted ore goes to eight Huntington-Heberlein pots which have a total capacity of 100 tons in 24 hours. The flue dust produced is briquetted with 10 per cent. of burned lime and dried for from three to six weeks. This leaves the briquettes hard and well suited for charging. Owing to the high percentage of copper in the furnace charge, it is difficult to keep the lead wells open, consequently much of the time the lead is run out with the matte. It is separated in a rectangular settler which overflows into a circular oil-fired matte settler. If the matte is sufficiently low in lead, it is converted directly for copper; otherwise it is cast, crushed, roasted and recharged into the furnace. When the lead wells are in working order, the lead is drossed at the furnace, but when the lead is obtained from the settler it is remelted and liquated in a small reverberatory furnace.

The Salida smeltery has been described by F. D. Weeks (*ibid.*, p. 1691). The ore is rough-roasted in Godfrey and Wedge furnaces and sintered in Dwight-Lloyd machines. The plant was one of the first to install a Dwight-Lloyd equipment. The product from the Godfrey and Wedge furnaces falls onto the center of a revolving cast-iron table where it is sprayed with water and discharged at the edge by fixed plows. This keeps down the dust and supplies the product with the required moisture for treating in the sintering machines. An improvement in the first installation of Dwight-Lloyd machines has been made by placing an adjustable rail by the side of the pallets. This rail carries the weight of pallets and prevents excessive wear and consequent leakage when the pallets are drawn across the top of the wind box. In order to eliminate the personal equation on the part of the assayers, the small bullets of lead bullion obtained by dip-sampling, each weighing about one-half assay ton, are weighed without trimming and cupelled. The results of the assays are not calculated by the assayer; the weights are reported as obtained, and changed into ounces per ton in the office.

Parkes Process.—The compositions of the compounds formed in the Parkes process, the best procedure for obtaining a crust containing a minimum of lead, the reduction of loss to a minimum of metal, still form a field for research. Some light has

been thrown on the subject by the experiments of F. C. Newton (*ibid.*, pp. 473-77). With the idea that the compound Zn_3Ag_2, freezing at 665° C., might be skimmed from the lead, the zinc for desilverization was added at 705° C., and successive skimmings were made as the temperature fell to 345° C. The crusts obtained at the higher temperatures were distinctly poorer in silver than those removed at temperatures around 535°, the usual skimming temperature. With temperatures lower than 535°, considerable lead was removed with the crust. The high temperatures increased the losses of zinc and lead by oxidation, shortened the life of the kettles and made the work around the kettles more severe. It is probable that the compound Zn_3Ag_2 dissolves in the lead and does not freeze at its melting point of 665°.

Fume Condensation.—"Metallurgical Smoke" is the subject of a paper by Prof. Charles H. Fulton published by the Bureau of Mines (Bull. 84). It discusses the various methods for precipitating fume and dust in use at copper and lead plants, gives tabulated analyses of fume and flue dust, and furnishes a bibliography of the subject. The smoke problem has also been discussed by F. G. Cottrell (*Mineral Industry*, xxiii, 867) with special reference to the development and success of the Cottrell method of electric precipitation (see also *Copper, supra*).

Lead Poisoning.—Lead poisoning at smelteries has been investigated by Alice Hamilton; the results obtained are summarized in *Mineral Industry* for 1914 (xxiii, 493). It is found that in the United States, out of 7,400 men employed in 1912 in 19 plants, 1,769 men suffered from lead poisoning, while of 2,400 men in England only 56 were affected. The difference is due to the laws enacted in England and their proper enforcement. Lead poisoning has been shown to be caused mainly by dust and smoke entering through the mouth and nose, and not, as formerly supposed, by absorption through the skin. Poisoning was found to be most prevalent in ore-hearth plants. In blast-furnace plants most of the poisoning occurred on the tapping floor. Converting lead matte causes about as much poisoning as ore-hearth work. Dwight-Lloyd sintering causes less poisoning than pot-roasting. Men handling ores and by-products are frequently affected by lead.

The same author discusses lead poisoning in storage-battery factories. In some of the processes involved, lead fume, lead dust and oxide dust are produced, all of which are conducive to lead poisoning. In 1912 the cases of poisoning in storage battery plants in Germany formed 0.97 per cent. of the men employed; in Great Britain, 3 per cent.; in the United States, in the five largest factories, 17.9 per cent. Existing laws should be enforced, compelling the manufacturers to instal hoods, exhausts, etc., and to provide proper washing facilities.

ZINC

W. R. Ingalls

Foreign Markets.—It was foreseen in 1914 that the isolation of the German and Belgian zinc smelters, depriving Great Britain, France and Russia of the larger part of their normal supply of spelter and causing them to turn to the United States, was going to have extraordinary industrial and commercial effects, but nobody imagined that they would be so marvellous as the event. By the German capture of all the smelteries of Belgium and Poland and the works in the north of France, the mining companies of Broken Hill, New South Wales, which had sold nearly all of their ore to Belgian and German smelters were deprived of their market. Great Britain thus found herself amply supplied with ore but nearly destitute of spelter for lack of smelting capacity. Certain of the Australian interests made plans for building new smelting works, but the German firms to whom the ore was contracted intervened and the matter passed into the courts and a decision releasing the mining companies was not rendered until late in the year. One company had previously cut the

Gordian knot by selling ore to American smelters, assuming all risks, but this was not done early enough to prevent a bad situation from arising. In the meanwhile the British zinc smelters had done practically nothing to relieve their country's necessity.

Commercial Conditions.—The publication of the American statistics early in January, which showed that the unsold stock of spelter had been reduced to less than 20,000 tons, started a buying movement which lifted the price by leaps and bounds. At the beginning of 1915 the price was 5.40 cents, basis St. Louis; at the beginning of March it was 10 cents, a figure never previously recorded. During March the price receded to about eight cents, and it was the general opinion among experts that it would gradually fall. On the contrary, an enormous demand by ammunition manufacturers (see also *Iron and Steel, supra*), developing early in April, started the market upward and within a relatively few weeks 25 cents per lb. was realized for prime western spelter. Brass special and intermediate spelters commanded abnormal premiums, while high-grade spelter fetched 40 cents per pound.

The phenomenal price for spelter paralyzed the consumption of zinc for domestic peaceful purposes, especially the consumption of galvanized iron and steel; in many wares wherein zinc was formerly an element, substitutes were used and fortunately a good many substitutes were available. Indiscreet buying by new figures in the market, narrow military specifications, sharp manipulations by sellers, were factors in this extraordinary market. The inwardness of the situation was, however, that in the exhaustion of stocks the market had lost its balance wheel, while there was a prospective requirement for spelter greater than American producers could supply if all buyers were to be satisfied. Late in the summer the price for spelter declined to 10-11 cents per pound, but it rallied later to 16-18 cents.

During this time the producers of zinc ore were much dissatisfied owing to the failure of the raw product to rise in the same proportion as spelter. Charges were freely made by zinc miners that the ore market was being manipulated against them by the smelters; the state of Missouri was led to make an investigation, and the U. S. Department of Justice inaugurated an inquiry to find out if the smelters were operating in contravention of the Sherman law. There was at all times an excessive supply of zinc ore, but during the first three quarters of 1915 there was a deficiency in smelting capacity. The high prices paid for spelter represented a premium upon the use of smelting capacity, not a scarcity of ore.

The extraordinary profit realized in zinc smelting had the natural result of stimulating production, which was done more quickly than anybody conceived to be possible. Furnaces were added quickly to existing plants, idle plants were put in operation, abandoned plants were rejuvenated, and new plants were laid down (see *infra*). At the beginning of 1915 the zinc smelting capacity of the United States was estimated at about 500,000 tons of spelter per annum. At the middle of the year it was estimated that plans then under way would give a capacity for 660,000 tons by the end of the year, but this is not going to be realized, although it will be some time in 1916. The maximum production of spelter in the United States previous to 1915 was about 360,000 tons.

High-Grade Spelter.—Previous to the war there was a relatively small demand for high-grade spelter (99.9 per cent. zinc) and intermediate spelter (99.5 to 99.9 per cent. zinc). The military demand for spelter focused especially upon those grades, which are required in the manufacture of cartridge brass. The single producer of high-grade spelter, strictly speaking, was able to exact whatever price he pleased. Other producers were led to manufacture intermediate spelter, either by the smelting of selected ore, or by the redistillation of common spelter. The latter was practiced on a large scale.

Ore Supply.—Ore from foreign countries was brought to the United States in large quantities in 1915, coming from countries whence none had been received heretofore. A large

tonnage of Australian ore was brought, ships being chartered to fetch it by way of the Panama Canal and deliver it at Mobile. The blockade of the Panama Canal in October compelled several of these ships to round Cape Horn. American smelters are able to purchase this ore at relatively low figures, there being no other market for it. The supply of ore was further increased by the expanding use of the flotation process (see *Mining and Ore Dressing, supra*), while the high prices for ore, even if not so high as for spelter, stimulated production in all quarters. The supply of ore became so excessive that during periods of the year producers found difficulty in finding buyers for it on any terms.

New Smelters.—Among the new plants laid down in 1915 was an immense plant at Donora, Pa., by the U. S. Steel Corporation, which, when completed, will have capacity for producing 40,000 tons of spelter per annum and will be the largest single zinc smeltery in the world. Previous to the war 18 months would have been reckoned as a reasonable time for the construction of such a plant. By working night and day and concentrating its whole construction force upon this plant, the company succeeded in producing spelter on Oct. 21, just four months and ten days after the beginning of construction. The Steel Corporation was previously engaged in the zinc-smelting business, having plants at Cherryvale, Kans., and St. Louis, but with the addition of Donora its production of spelter will be immensely increased. Inasmuch as the Steel Corporation is the largest consumer of spelter in the United States, and the spelter market heretofore has been to a large extent governed by whether this corporation was buying or not, this new industrial development will be of far-reaching importance.

Technical Progress.—The chief metallurgical feature of 1915 was the establishment of an electrometallurgy of zinc. The production of electrolytic spelter was actually begun by the Anaconda Copper Mining Co. at Anaconda, Mont., by the Weedon Mining Co. at Welland, Ont., and by the Consolidated Mining and Smelting Co. at Trail, B. C., while other concerns carried on experimental work and will probably soon begin the production of this kind of spelter. This branch of metallurgy has heretofore failed to develop owing to the relatively high cost of producing spelter electrically, but with the conditions existing in 1915, nothing short of a preposterous cost could be too high to permit a profit. It is possible that the manufacture of electrolytic spelter having been begun under such favorable auspices, improvements will be invented which will permit the production of spelter in this way to be carried on under normal conditions.

The other important metallurgical novelty of 1915 was the refining of crude spelter by redistillation (fractional distillation) on a large scale. The extraordinary premium paid for high-grade intermediate spelter rendered this a profitable operation.

STATISTICS OF MINERAL PRODUCTION

WORLD'S PRINCIPAL MINERAL PRODUCTS, 1900–14

(In metric tons)

(*The Mineral Industry*)

	1900	1905	1910	1912	1913	1914
Aluminium	7,339	16,810	.....	.....	78,716	86,390
Asphaltum	322,896	353,827	511,217	725,915	.....	.....
Coal	765,138,033	928,049,163	1,151,239,643	1,290,877,806	1,226,330,612	1,221,415,598[1]
Copper	491,435	698,931	877,494	1,011,312	1,002,284	923,888
Lead	849,168	988,727	1,093,043	1,212,252	1,142,264	.....
Petroleum	19,484,471	29,878,112	44,228,588	48,110,742	51,351,136	52,800,542
Phosphate rock	2,795,149	3,845,552	5,594,856	6,791,450	7,050,528	.....
Pig iron	39,599,457	54,034,783	66,210,720	73,179,767	.....	.....
Steel	28,727,239	43,900,648	58,656,312	58,379,569	.....	.....
Tin	82,117	100,795	115,759	124,483	126,878	.....
Zinc	479,128	653,565	824,973	976,872	996,200	.....

[1]Approximate.

MINERAL PRODUCTION BY PRINCIPAL COUNTRIES, 1900–14

(In metric tons)

(*The Mineral Industry*)

	1900	1905	1910	1912	1913	1914
Coal						
Australasia	7,599,269	9,227,129	12,132,200	14,102,887	14,531,268	.....
Austria-Hungary[1]	39,107,786	41,952,008	47,943,109	52,521,776	54,112,272	41,460,000
Belgium	23,462,817	21,775,280	23,916,560	22,972,740	22,858,000	.....
France	33,404,298	35,218,000	38,349,942	41,308,580	40,050,888	.....
Germany	149,788,256	173,810,669	222,375,076	255,810,094	191,511,154	161,535,224
Japan	7,370,667	11,955,946	15,681,324	19,515,285	19,639,755	19,686,630
Russia	16,156,055	18,727,766	24,026,000	30,641,163	32,206,000	33,113,000
United Kingdom	228,772,886	239,906,999	268,676,528	257,136,000	292,047,544	270,070,414
United States	243,414,164	351,120,625	445,816,040	534,466,580	517,285,050	465,994,080
Copper						
Africa	6,828	7,442	15,449	16,633	25,411	24,135
Australasia	23,368	34,483	40,962	47,774	47,326	37,592
Austria-Hungary	1,377	1,346	2,276	4,024	4,135	3,310
Bolivia	2,134	2,032	2,540	4,681	3,658	2,743
Canada	8,595	21,595	23,810	34,213	34,587	34,027
Chile	26,016	29,126	38,346	39,204	40,195	40,876
Cuba	.....	.....	3,538	4,393	3,517	6,251
Germany	20,635	22,492	25,105	24,304	25,309	30,480
Italy	2,797	2,997	3,272	2,337	1,626	2,410
Japan	28,285	35,944	50,703	62,486	73,152	68,058
Mexico	22,473	65,449	62,504	73,617	52,815	36,337
Norway	3,998	6,406	10,592	11,156	11,796	.....
Peru	8,353	12,213	27,375	26,483	25,715	23,647
Russia	8,128	9,515	22,670	33,550	42,970	31,938
Spain-Portugal	53,718	45,527	51,080	59,876	54,696	37,099
Sweden	457	1,385	2,032	1,524	1,016	.....
United States	274,933	397,069	492,720	563,260	557,387	525,529
Lead						
Australasia	87,100	106,418	105,897	113,710	116,000	.....
Austria	10,650	12,968	15,476	19,993	22,312	.....
Belgium	16,365	22,885	40,715	54,940	35,750	.....
Canada	28,648	25,391	14,967	16,226	17,089	.....
France	15,210	24,100	20,226	31,080	28,000	.....
Germany	121,513	152,590	159,851	192,618	181,100	.....
Greece	16,396	13,729	16,710	14,498	18,400	.....
Italy	23,673	19,097	14,495	21,450	21,700	.....
Mexico	63,827	101,196	120,662	109,717	55,530	.....
Spain	172,530	185,693	190,523	232,612	203,000	.....
United Kingdom	35,500	28,494	30,799	26,061	30,500	.....
United States	253,204	290,472	355,183	372,056	395,358	.....
Petroleum						
Dutch East Indies	.....	1,062,224	1,700,000	1,520,000	1,534,223	1,638,872[2]
Galicia	.....	794,862	1,700,000	1,180,568	1,087,286	70,004[3]
India	151,523	581,519	863,615	1,001,316	1,057,355	1,066,666[3]
Roumania	250,000	614,870	1,352,300	1,806,942	1,885,225	1,783,947
Russia	9,844,390	7,505,637	8,952,793	9,249,600	8,377,914	8,936,069
United States	8,262,406	18,969,000	28,331,000	29,906,416	33,126,164	35,435,004
Pig Iron						
Austria-Hungary	1,311,949	1,372,300	2,010,000	2,312,689	1,757,864[4]	.....
Belgium	1,018,561	1,310,290	1,852,090	2,301,290	2,484,690	.....
Canada	87,594	475,491	752,090	1,014,587	1,128,967	783,164
France	2,714,298	3,077,000	4,032,459	4,871,992	5,311,316	.....
Germany	8,520,540	10,987,623	14,793,325	17,852,571	19,291,920	14,389,547
Italy	23,990	31,300	215,000	379,987	426,775	385,114
Russia	2,933,786	2,125,000	3,042,046	4,197,638	4,547,000	4,270,000
Spain	91,126	383,100	367,000	403,243	424,774	.....
Sweden	526,868	531,200	604,300	701,900	735,000	635,100
United Kingdom	9,003,046	9,746,221	10,380,723	8,751,464	10,481,917	9,005,898
United States	14,009,870	23,340,258	27,636,687	30,202,568	30,966,301	23,332,224

[1] Includes lignite. [2] Includes British Borneo. [3] Estimated. [4] Austria alone.

MINERAL PRODUCTION BY PRINCIPAL COUNTRIES, 1900–14—*Continued*

	1900	1905	1910	1912	1913	1914
Steel						
Austria-Hungary	1,145,654	1,188,000	2,188,371	2,785,105	2,682,619	2,785,105
Belgium	655,199	1,023,500	1,449,500	2,515,040	.....	.....
Canada	23,954	403,449	835,478	853,031	1,168,993	.....
France	1,565,164	2,210,284	3,506,497	4,078,352	4,419,241	.....
Germany	6,645,869	10,066,553	13,698,638	17,301,998	18,958,819	14,973,106
Italy	115,887	117,300	635,000	801,907	846,085	.....
Russia	2,217,752	2,208,000	3,479,000	4,498,193	4,827,240	.....
Spain	144,355	264,970	316,301	317,880	365,118	.....
Sweden	300,536	340,000	468,600	508,300	590,887	500,600
United Kingdom	5,130,800	5,812,282	6,374,481	6,796,144	7,663,876	7,735,113
United States	10,382,069	20,354,291	26,512,437	31,751,324	31,822,555	23,513,030
Zinc						
Austria	6,742	9,204	13,305	19,096	20,000	.....
Belgium	119,315	142,555	181,745	205,940	198,000	.....
France	36,305	43,200	51,527	65,565	70,000	.....
Germany	155,799	198,208	227,754	271,064	285,000	.....
Holland	6,845	13,550	20,975	23,932	24,000	.....
Russia	5,963	7,520	8,128	11,176	9,000	.....
United Kingdom	30,207	50,125	63,587	57,231	59,000	.....
United States	111,794	183,014	251,348	316,368	323,200	.....

WORLD'S PRODUCTION AND COINAGE OF PRECIOUS METALS, 1851–1914

(*Report of the Director of the Mint*)

Period	Gold		Silver		Commercial Ratio of Silver to Gold
	Fine Ounces	Value	Fine Ounces	Coining Value	
Production:					
1851–1855 (average)	6,410,324	$132,513,000	28,488,597	$36,824,000	15.41
1856–1860 (average)	6,486,262	134,083,000	29,095,428	37,618,000	15.30
1861–1865 (average)	5,949,582	122,989,000	35,401,972	45,772,000	15.40
1866–1870 (average)	6,270,086	129,614,000	43,051,583	55,663,000	15.55
1871–1875 (average)	5,591,014	115,577,000	63,317,014	81,864,000	15.98
1876–1880 (average)	5,543,110	114,586,000	78,775,602	101,851,000	17.86
1881–1885 (average)	4,794,755	99,116,000	92,003,944	118,955,000	18.62
1886–1890 (average)	5,461,282	112,895,000	108,911,431	140,815,000	21.14
1891–1895 (average)	7,882,565	162,947,000	157,581,331	203,742,000	27.06
1896–1900 (average)	12,446,939	257,301,100	165,693,304	214,229,700	33.50
1901–1905 (average)	15,606,730	322,619,820	167,995,408	217,206,180	36.30
1906	19,471,080	402,503,000	165,054,497	213,403,800	30.54
1907	19,977,260	412,966,600	184,206,984	238,166,600	31.24
1908	21,422,244	442,476,900	203,131,404	262,634,500	38.64
1909	21,965,111	454,059,100	212,149,023	274,293,700	39.74
1910	22,022,180	455,239,100	221,715,763	286,662,700	38.22
1911	22,348,313	461,939,700	226,192,923	292,451,500	38.33
1912	22,549,335	466,136,100	224,310,654	261,402,300	33.62
1913	22,249,596	459,941,100	223,907,843	135,246,400	34.19
1914	22,039,548	455,676,600	211,103,377	116,719,200	37.49
Coinage:					
1873–1880 (average)	8,665,153	179,124,608	91,460,904	118,252,482	.....
1881–1890 (average)	5,898,643	121,935,781	97,881,838	126,554,296	.....
1891–1900 (average)	13,707,461	283,358,375	116,010,359	149,993,192	.....
1901–1905 (average)	13,645,423	282,075,960	137,801,324	178,852,964	.....
1906	17,721,058	366,326,788	120,339,501	155,590,466	.....
1907	19,921,014	411,803,902	171,561,490	221,816,867	.....
1908	15,828,573	327,205,649	151,352,824	195,688,499	.....
1909	15,153,116	313,242,714	87,728,951	113,427,331	.....
1910	22,004,542	454,951,834	78,786,842	108,934,541	.....
1911	18,002,444	372,143,555	117,237,838	148,156,282	.....
1912	17,447,478	360,671,382	161,763,415	171,293,019	.....
1913	15,494,784	320,305,619	155,497,316	155,265,702	.....
1914	5,081,928	105,052,774	148,532,691	131,938,714	.....

MINERAL PRODUCTION OF THE UNITED STATES, 1900–14

(United States Geological Survey)

	1900	1905	1910	1912	1913	1914
METALS:						
Iron ore.....long tons	.....	42,526,133	56,889,734	57,017,614	59,643,098	39,714,280
Iron, pig....long tons	13,789,242	22,992,380	27,303,567	29,726,937	30,388,935	22,263,263
Steel.....long tons	10,188,329	20,023,947	26,094,919	31,251,303	31,300,874	23,513,030
Silver.....troy ounces	57,647,000	56,101,600	57,137,900	63,766,800	66,801,500	72,455,100
Gold.....troy ounces	3,829,897	4,265,742	4,657,018	4,520,717	4,299,784	4,572,976
Copper.....pounds	606,117,166	888,784,267	1,080,159,509	1,243,268,720	1,224,484,098	1,150,137,192
Lead.....short tons	270,824	302,000	372,227	392,517	411,878	512,794
Zinc.....short tons	123,886	203,849	252,479	323,907	337,252	343,418
Quicksilver.....flasks	28,317	30,451	20,601	25,064	20,213	16,548
Aluminium....pounds	*a*7,150,000	11,347,000	47,734,000	65,607,000	72,379,000	79,129,000
Antimonial lead..sh.t.	.....	.....	14,069	13,552	16,665	16,667
Platinum..troy ounces	400	318	773	1,005	1,034	6,324
NON-METALS:						
Fuels:						
Bitum. coal *b*....sh.t.	212,316,112	315,062,785	417,111,142	450,104,982	478,435,297	422,703,970
Penn. anthracite .l.t.	51,221,353	69,339,152	75,433,246	75,322,855	81,718,680	81,090,631
Coke.....short tons	.....	32,231,129	41,708,810	43,983,599	46,299,530	34,555,914
Petroleum....barrels	63,620,529	134,717,580	209,557,248	222,113,218	248,446,230	265,762,535
Struct'l Materials:						
Cement.....barrels	17,231,150	40,102,308	77,785,141	83,351,191	89,541,348	87,257,552
Lime.....short tons	.....	2,984,100	3,505,954	3,529,462	3,595,390	3,380,928
Sand & gravel..sh.t.	.....	23,204,967	69,410,436	68,318,877	77,764,049	77,662,086
Abrasive Materials:						
Corundum and emery.....short tons	4,305	2,126	1,028	992	957	485
Garnet....short tons	3,185	5,050	3,814	4,182	5,308	4,231
Pumice....short tons	.....	1,832	23,271	27,146	24,563	27,591
Chemical Materials:						
Arsenious oxide..lbs.	.....	1,507,386	2,994,000	6,282,000	5,026,000	9,340,000
Borax (crude)...sh.t.	25,837	46,334	42,357	42,315	58,051	62,400
Bromine.....pounds	521,444	1,192,758	245,437	647,200	572,400	576,991
Fluorspar....sh. tons	18,450	57,385	69,427	116,545	115,580	95,116
Gypsum...short tons	594,462	1,043,202	2,379,057	2,500,757	2,599,508	2,476,465
Phosphate rock..l.t.	1,491,216	1,947,190	2,654,988	3,973,332	3,111,221	2,734,043
Pyrite.....long tons	204,615	253,000	241,612	350,928	341,338	336,662
Sulphur....long tons	*c* 3,525	181,677	255,534	303,472	311,590	327,634
Salt.....barrels	20,869,342	25,966,122	30,305,656	33,324,808	34,399,298	34,804,683
Pigments:						
Barytes...short tons	67,680	48,235	42,975	37,478	45,298	51,547
Mineral paints..sh.t.	57,426	63,521	85,304	181,154	168,168	173,557
Zinc oxide.....sh.t.	48,840	68,603	58,481			
Miscellaneous:						
Asbestos..short tons	1,054	3,109	3,693	4,403	1,100	1,247
Asphalt...short tons	54,389	115,267	260,080	449,510	529,190	438,271
Bauxite....long tons	23,184	48,129	148,932	159,865	210,241	219,318
Chromic iron ore....long tons	140	22	205	201	255	591
Feldspar...short tons	24,821	35,419	81,102	86,572	120,955	135,419
Fuller's earth...sh.t.	9,698	25,178	32,822	32,715	38,594	40,981
Glass sand.....sh.t.	.....	1,060,334	1,461,089	1,465,386	1,791,800	1,619,649
Graphite....sh. tons	3,365	24,986	4,202	2,445	4,775	4,335
Magnesite...sh. tons	2,252	3,933	12,443	10,512	9,632	11,293
Manganese ore...l.t.	11,771	4,118	2,258	1,664	4,048	2,635
Manganiferous ore long tons	.....	.....	61,101	51,517	59,403	98,265
Mica.....pounds	11,450,283	3,176,875	10,606,190	7,297,483	12,344,677	103,110,540
Mineral waters gallons sold	45,276,995	46,544,361	62,030,125	62,281,201	57,867,399	54,358,466
Quartz....short tons	32,495	51,145	63,577	97,874	97,902	153,401
Talc and soapstone short tons	27,943	40,134	79,006	92,403	94,128	86,221
Talc, fibrous....sh.t.	63,500	56,500	71,710	66,867	81,705	86,075
Thorium minerals (monazite) and zircon.....pounds	908,006	1,352,418	99,301	.....	.....	.....
Tungsten ore ...sh.t.	40	803	1,821	1,330	1,537	990

a Consumption. *b* Including brown coal and lignite, and anthracite mined elsewhere than in Pennsylvania. *c* Short tons.

VALUE OF MINERAL PRODUCTS OF THE UNITED STATES, 1900–14

(United States Geological Survey)

	1900	1905	1910	1912	1913	1914
METALS:						
Iron ore	$66,590,504	$75,165,604	$140,735,607	$107,050,153	$130,905,558	$71,905,079
Iron, pig (*a*)	259,944,000	382,450,000	412,162,486	420,563,388	458,342,345	298,777,429
Silver	35,741,100	34,221,976	30,854,500	39,197,500	40,348,100	40,067,700
Gold	79,171,000	88,180,700	96,269,100	93,451,500	88,884,400	94,531,800
Copper	98,494,039	137,761,561	137,180,257	205,139,338	189,795,035	152,968,246
Lead	23,561,688	28,690,000	32,755,976	37,385,550	36,245,264	39,997,932
Zinc	10,654,196	24,054,182	27,267,732	44,699,166	37,772,224	35,028,636
Quicksilver	1,302,586	1,103,120	958,153	1,053,941	813,171	811,680
Aluminium	1,920,000	3,246,300	8,955,700	15,089,380	13,845,000	14,522,700
Antimonial lead	.....	.....	1,338,090	1,311,348	1,591,854	1,572,167
Platinum	2,500	5,320	25,277	45,778	46,530	280,885
NON-METALS: (*a*)						
Fuels:						
Bituminous coal	220,930,313	334,658,294	469,281,719	517,983,445	565,234,952	493,309,244
Penna. anthracite	85,757,851	141,879,000	160,275,302	177,622,626	195,181,127	188,181,399
Coke	.....	72,476,196	99,742,701	111,736,696	128,922,273	88,334,217
Petroleum	75,989,313	84,157,399	127,899,688	163,802,334	237,121,388	214,125,215
Natural gas	.....	41,562,855	70,756,158	84,563,957	87,846,677	94,115,524
Structural Materials:						
Clay products	96,212,345	149,697,188	170,115,974	172,811,275	181,289,132	164,986,983
Cement	13,283,581	35,931,533	68,752,092	67,461,513	89,550,527	80,533,203
Lime	6,797,496	10,941,680	14,088,039	13,970,114	14,648,362	13,247,676
Sand and gravel	.....	11,223,645	21,037,630	23,081,555	22,321,517	22,278,969
Stone	36,970,777	63,798,748	76,520,584	78,284,572	83,732,995	77,412,292
Abrasive Materials:						
Grindstones	710,026	777,606	796,294	916,339	855,627	689,344
Corundum and emery	102,715	61,464	15,077	6,652	4,785	2,425
Garnet	123,475	148,095	113,574	137,800	183,422	145,510
Pumice	.....	5,540	94,943	86,687	55,408	59,172
Oilstones, etc	174,087	244,546	228,694	232,218	207,352	167,948
Chemical Materials:						
Arsenious oxide	.....	32,210	52,305	190,757	159,236	313,147
Borax (crude)	1,018,251	1,019,154	1,201,842	1,127,813	1,491,530	1,464,400
Bromine	140,790	178,914	31,684	136,201	115,436	203,094
Fluorspar	94,500	362,488	430,196	769,163	736,286	570,041
Gypsum	1,627,203	3,029,227	6,523,029	6,563,908	6,774,822	6,895,989
Phosphate rock	5,359,248	6,763,403	10,917,000	11,675,774	11,796,231	9,608,041
Pyrite	749,991	938,492	977,978	1,334,259	1,286,084	1,283,346
Sulphur	88,100	3,706,560	4,605,112	5,256,422	5,479,849	5,954,236
Salt	6,944,603	6,095,922	7,900,344	9,402,772	10,123,139	10,271,358
Pigments:						
Barytes (crude)	188,089	148,803	121,746	153,313	156,275	153,715
Mineral paints	644,089	1,697,130	2,141,654	} 10,069,588	9,533,306	10,451,746
Zinc oxide	3,667,210	5,520,240	5,238,945			
Miscellaneous:						
Asbestos	16,310	42,975	68,357	87,959	11,000	18,965
Asphalt	415,958	758,153	3,080,670	4,620,731	5,282,370	3,647,592
Bauxite	89,676	240,292	716,258	768,932	997,698	1,069,194
Chromic iron ore	1,400	375	2,729	2,753	2,854	8,715
Feldspar	180,971	226,157	502,452	520,562	776,551	629,873
Fuller's earth	67,535	214,497	293,709	305,522	369,750	403,646
Glass sand	.....	1,107,730	1,516,711	1,430,741	1,895,991	1,568,030
Graphite	197,579	318,211	335,443	207,033	293,756	324,118
Magnesite	19,333	15,221	74,658	105,120	77,056	124,223
Manganese ore	100,289	36,214	22,892	15,723	40,480	27,377
Manganiferous ore	.....	.....	186,765	19,942	25,124	218,497
Mica	147,960	178,588	337,097	331,896	436,060	329,956
Mineral waters	5,791,805	6,491,251	6,357,590	6,615,671	5,631,391	4,892,328
Quartz	86,351	104,109	193,757	191,685	201,488	360,502
Talc & soapstone	383,541	637,062	684,213	1,050,693	1,119,597	1,043,801
Talc, fibrous	499,500	445,000	728,180	656,270	788,500	821,286
Thorium minerals (monazite), and zircon	48,805	163,908	12,006	.....	.....	.....
Tungsten ore	11,040	268,676	807,307	502,158	672,118	435,000

(*a*) "Spot" value, that is, value at the point of production.

MINERAL PRODUCTION BY STATES, 1900–14

(United States Geological Survey)

	1900	1905	1910	1912	1913	1914
METALS:						
COPPER (pounds):						
Alaska	.....	4,900,866	4,311,026	31,926,209	23,423,070	24,985,847
Arizona	118,317,761	226,854,461	297,250,538	359,322,096	404,278,809	382,449,922
California	28,511,225	16,697,489	45,760,200	31,516,471	32,492,265	29,784,173
Colorado	7,826,949	9,404,830	9,307,497	7,963,520	9,052,104	7,316,066
Idaho	290,162	7,321,585	6,877,515	7,182,185	8,711,490	5,875,205
Michigan	145,461,498	230,287,992	221,462,984	231,112,228	155,715,286	158,009,748
Montana	270,738,489	314,750,582	283,078,473	308,770,826	285,719,918	236,805,845
Nevada	407,535	413,292	64,494,640	83,413,900	85,209,536	60,122,904
New Mexico	4,169,400	5,334,192	3,784,609	29,170,100	50,196,881	64,204,703
Tennessee	.....	.....	16,691,777	18,395,256	19,489,654	18,661,112
Utah	18,354,726	54,083,506	125,185,455	132,150,052	148,057,450	160,589,660
GOLD (fine ounces):						
Alaska	395,271	722,026	787,148	831,981	735,364	800,471
Arizona	202,856	130,192	165,113	183,117	198,406	221,020
California	765,109	928,660	988,854	967,887	979,174	1,028,061
Colorado	1,394,622	1,243,291	992,967	906,606	876,057	962,779
Idaho	83,433	52,032	50,113	67,810	60,193	57,431
Montana	227,266	236,520	179,974	179,371	160,647	200,446
Nevada	97,050	259,246	913,015	656,722	579,408	558,064
New Mexico	40,292	12,858	23,084	36,506	43,149	58,974
Oregon	81,980	60,222	32,960	36,749	71,495	76,887
South Dakota	298,842	334,460	260,266	378,470	348,988	354,782
Utah	192,155	248,691	208,627	208,623	172,711	163,362
Washington	34,743	17,899	38,992	33,023	31,806	28,435
IRON ORE (long tons):						
Alabama	2,759,247	3,782,831	4,801,275	4,776,545	5,333,218	4,514,926
Michigan	9,926,727	10,885,902	13,303,906	12,797,468	12,668,560	8,533,280
Minnesota	9,834,399	21,735,182	31,966,769	34,249,813	36,603,331	23,298,547
New Jersey	344,247	526,271	521,832	366,823	291,653	346,820
New York	441,485	1,139,937	1,287,209	1,167,405	1,420,889	640,252
Pennsylvania	877,684	808,717	739,799	522,172	478,693	400,062
Tennessee	594,171	734,770	732,247	416,885	364,092	330,214
Virginia	a921,821	.....	903,377	412,520	492,649	346,382
Wisconsin	746,105	859,283	1,149,551	1,152,250	896,243	591,595
IRON, PIG (long tons):						
Alabama	1,184,337	1,604,062	1,969,770	1,987,753	1,924,762	1,661,420
Illinois	1,363,383	2,034,483	2,606,335	2,806,378	2,892,263	1,793,714
New York	292,827	1,198,068	1,895,018	1,973,090	1,967,449	1,357,575
Ohio	2,470,910	4,586,110	5,584,279	7,127,176	6,913,961	5,226,925
Pennsylvania	6,365,935	10,579,127	11,014,652	12,437,685	12,871,349	9,267,197
Tennessee	362,190	372,692	400,269	339,397	270,481	178,481
Virginia	490,617	510,210	402,625	328,961	380,508	197,981
LEAD (short tons):						
Colorado	82,137	56,638	38,542	37,039	42,840	41,198
Idaho	85,444	99,027	109,951	127,780	137,802	177,827
Missouri	.....	b104,058	161,659	162,610	152,430	194,275
Utah	48,044	44,996	60,605	60,664	71,069	88.976
Wisconsin	.....	.....	3,909	3,301	2,639	1,818
SILVER (fine ounces):						
Arizona	2,995,500	2,605,700	2,655,700	3,445,500	3,912,000	4,439,500
California	941,400	1,082,000	1,791,600	1,384,800	1,421,500	2,020,800
Colorado	20,483,900	12,942,800	8,523,000	7,933,100	8,989,700	8,804,400
Idaho	6,429,100	8,125,600	7,027,000	7,862,900	9,477,100	12,573,800
Michigan	102,000	253,000	262,200	543,500	333,700	415,500
Montana	14,195,400	13,454,700	12,282,900	12,524,000	12,540,300	12,536,700
Nevada	1,358,700	5,863,500	12,366,000	13,851,400	15,657,400	15,877,200
New Mexico	434,300	354,900	779,000	1,460,800	1,666,900	1,771,300
South Dakota	536,200	179,000	120,600	205,800	172,600	179,800
Texas	477,400	417,200	364,400	379,800	429,800	574,700
Utah	9,267,600	10,319,800	10,445,900	13,076,700	11,282,300	11,722,000
Washington	224,500	119,400	204,900	350,800	218,700	341,300
ZINC (short tons):						
Colorado	.....	6,599	23,238	60,841	58,113	41,746
Kansas	62,136	114,287	10,220	5,668	9,956	10,634
Missouri	14,741	11,844	140,652	149,557	129,018	114,019
Montana	.....	.....	12,408	14,196	35,604	55,986
New Jersey	.....	.....	20,217	16,941	24,247	27,734
Utah	.....	.....	7,221	7,756	9,503	6,818
Wisconsin	.....	.....	19,752	34,137	33,743	30.914

a Includes production of West Virginia. *b* Includes production of entire Mississippi Valley.

MINERAL PRODUCTION BY STATES, 1900–14—*Continued*

	1900	1905	1910	1912	1913	1914
NON-METALS:						
CEMENT (barrels):						
California	44,565	1,225,429	5,805,098	5,974,299	6,159,182	5,075,114
Illinois	240,442	1,545,500	4,459,450	4,299,357	5,083 799	5,401,605
Indiana	30,000	3,127,042	7,219,199	9,924,124	10,872,574	9,595,923
Iowa	.....	.....	.....	3,228,192	3,623,674	4,233,707
Kansas	80,000	230,686	5,655,808	3,225,040	3,374,836	3,431,142
Michigan	664,750	2,773,283	3,687,719	3,494,621	4,186,236	4,285,345
Missouri	.....	3,879,542	4,455,589	4,355,741	4,803,338	4,723,906
New Jersey	1,169,212	3,654,777	4,184,698	4,246,803	4,460,027	3,674,800
New York	465,832	2,111,411	3,296,350	4,492,806	5,208,020	5,886,124
Pennsylvania	4,984,417	13,813,487	26,675,978	26,441,338	28,701,845	26,570,151
COAL (short tons):						
Alabama	8,394,275	11,866,069	16,111,462	16,100,600	17,678,522	15,593,422
Arkansas	1,447,945	1,934,673	1,905,958	2,100,819	2,234,107	1,836,540
Colorado	5,244,364	8,826,429	11,973,736	10,977,824	9,232,510	8,170,559
Illinois	25,767,981	38,434,363	45,900,246	59,885,226	61,618,744	57,589,197
Indiana	6,484,086	11,895,252	18,389,815	15,285,718	17,165,671	16,641,132
Iowa	5,202,939	6,798,609	7,928,120	7,289,529	7,525,936	7,451,022
Kansas	4,467,870	6,423,979	4,921,451	6,986,182	7,202,210	6,860,988
Kentucky	5,328,964	8,432,523	14,623,319	16,490,521	19,616,600	20,382,763
Maryland	4,024,688	5,108,539	5,217,125	4,964,038	4,779,839	4,133,547
Michigan	849,475	1,473,211	1,534,967	1,206,230	1,231,786	1,283,030
Missouri	3,540,103	3,983,378	2,982,433	4,339,856	4,318,125	3,935,980
Montana	1,661,775	1,643,832	2,920,970	3,048,495	3,240,973	2,805,173
New Mexico	1,299,299	1,649,933	3,508,321	3,536,824	3,708,806	3,877,689
Ohio	18,988,150	25,552,950	34,209,668	34,528,727	36,200,527	18,843,115
Oklahoma	1,922,298	2,924,427	2,646,226	3,675,418	4,165,770	3,988,613
Pennsylvania: Anth.	57,367,915	77,659,850	84,485,236	84,361,598	91,524,922	90,821,507
Pennsylvania: Bitum.	79,842,326	118,413,637	150,521,526	161,865,488	173,781,217	147,983,294
Tennessee	3,509,562	5,766,690	7,121,380	6,473,228	6,860,184	5,943,258
Texas	968,373	1,200,684	1,892,176	2,188,612	2,429,144	2,323,773
Utah	1,147,027	1,332,372	2,517,809	3,016,149	3,254,828	3,103,036
Virginia	2,393,754	4,275,271	6,507,997	7,846,638	8,828,068	7,959,535
Washington	2,474,093	2,864,926	3,911,899	3,360,932	3,877,891	3,064,820
West Virginia	22,647,207	37,791,580	61,671,019	66,786,687	71,254,136	71,707,626
Wyoming	4,014,602	5,602,021	7,533,088	7,368,124	7,393,066	6,475,293
COKE (short tons):						
Alabama	2,110,837	2,576,986	3,249,027	2,975,489	3,323,664	3,084,149
Colorado	618,755	1,378,824	*e*1,346,211	972,941	879,461	666,083
Illinois	.....	10,307	1,514,504	1,764,944	1,859,553	1,425,168
New Mexico	44,774	89,638	401,646	413,906	467,945	362,572
Ohio	72,116	277,130	282,315	388,669	351,846	521,638
Pennsylvania	13,357,295	20,573,736	26,315,607	27,438,693	28,753,444	20,258,393
Tennessee	475,432	468,092	322,756	370,076	364,578	1,427,962
Virginia	685,156	1,499,481	1,493,655	967,947	1,303,603	.....
West Virginia	2,358,499	3,400,593	3,803,850	2,465,986	2,472,752	.....
NATURAL GAS (values):						
California	$79,083	$133,696	$476,697	$1,134,456	$1,883,450	$2,910,784
Illinois	1,700	7,223	613,642	616,467	574,015	437,275
Indiana	7,254,539	3,094,134	1,473,403	1,014,295	843,047	755,407
Kansas	356,900	2,261,836	7,755,367	4,336,635	3,288,394	3,340,025
New York	335,367	623,251	1,678,720	2,343,379	2,425,633	2,600,352
Ohio	2,178,234	5,721,462	8,626,954	11,891,299	10,521,930	14,667,790
Oklahoma	.....	130,137	3,490,704	7,334,599	7,436,389	8,050,039
Pennsylvania	10,215,412	19,197,336	21,057,211	18,539,672	21,695,845	20,401,295
West Virginia	2,959,032	10,075,804	23,816,553	33,324,475	34,164,850	35,515,329
PETROLEUM (bbls.):						
California	4,324,484	33,427,473	73,010,560	86,450,767	97,788,525	99,775,327
Colorado	317,385	376,238	239,794	206,052	188,793	222,773
Illinois	200	181,084	33,143,362	28,601,308	23,893,899	21,919,749
Indiana	4,874,392	10,964,247	2,159,725	970,009	956,099	1,335,456
Kansas	74,714	*c*12,013,495	1,128,668	1,592,796	2,375,029	3,103,585
Louisiana	.....	8,910,416	6,841,395	9,263,439	12,498,828	14,309,435
New York	.....	1,117,582	1,053,838	874,128	902,211	938,974
Ohio	22,362,730	16,346,660	9,916,370	*f*8,969,007	8,781,468	8,536,352
Oklahoma	6,472	*d*	52,028,718	51,427,071	63,579,384	73,631,724
Pennsylvania	.....	10,437,195	8,794,662	7,837,948	7,963,282	8,170,335
Texas	836,039	28,136,189	8,899,266	11,735,057	15,009,478	20,068,184
West Virginia	16,195,675	11,578,110	11,753,071	12,128,962	11,567,299	9,680,033

c Includes production of Oklahoma. *d* Included with figures for Kansas. *e* Includes production of Utah. *f* Includes production of Michigan.

IMPORTS AND EXPORTS OF MINERAL PRODUCTS, 1900–15]

(*U. S. Statistical Abstract*)

(000 omitted)

	1900	1905	1910	1911	1912	1913	1914	1915
IMPORTS:								
Aluminium	.....	.....	.....	.....	$2,068	$5,055	$4,148	$2,999
Antimony (ore and metal)	$341	$363	$551	$541	693	1,134	696	1,420
Asbestos, unmanufactured	293	706	1,122	1,318	1,378	1,760	1,678	1,513
Manufactures of	15	53	269	293	336	395	391	230
Bismuth	225	305	316	321	305	.....	.....	.....
Cement	.....	1,276	602	324	168	122	160	.....
Clays or earths	1,035	1,272	2,076	2,107	2,036	2,394	2,246	1,983
Coal	4,476	3,906	4,469	5,018	3,722	4,376	3,700	4,179
Coke	232	835	521	558	268	463	537	398
Copper (including ore and matte)	3,032	4,892	9,272	7,659	9,363	13,667	13,696	11,228
Manufactures of	12,457	19,942	30,938	32,013	35,843	45,909	40,809	20,432
Emery and other abrasives	201	309	473	502	.....	.....	.....	.....
Gold	44,573	53,648	43,339	73,607	48,936	69,194	66,538	171,568
Iron and Steel:								
Iron ore	1,497	1,670	6,763	6,691	6,119	7,035	6,984	3,823
Pig iron, including ferro-silicon	2,109	2,989	6,289	6,056	3,679	6,402	1,782	365
Scrap iron and steel	562	174	1,507	304	151	463	346	281
Manufactures of	17,806	20,346	33,213	29,623	22,720	26,770	26,550	18,185
Lead, ore and base bullion	3,128	3,616	3,643	4,038	3,834	3,397	1,987	2,574
Pig and manufactured	27	296	279	167	109	20	69	90
Manganese, ore and oxide of	2,693	1,661	1,592	1,453	1,292	2,196	1,841	1,494
Marble and manufactures of	812	1,308	1,552	1,477	1,384	1,393	1,335	894
Nickel ore and matte	1,070	1,205	3,618	3,946	4,565	6,398	6,109	5,074
Oils, mineral	220	494	610	2,143	3,654	9,216	13,665	9,790
Phosphates, crude	504	750	152	.....	.....	.....	.....	.....
Plaster rock	242	361	426	422	.....	.....	.....	.....
Platinum	1,832	1,959	3,345	3,983	5,013	5,213	3,975	1,630
Salt	625	496	395	401	364	377	423	391
Silver	35,256	27,484	45,217	45,937	47,050	41,268	30,326	29,110
Sulphur	1,224	1,694	2,626	3,108	3,919	4,111	3,695	4,107
Talc	1	47	115	83	117	.....	.....	.....
Tin	19,104	23,378	30,869	37,935	46,214	53,112	39,422	30,777
Zinc, ore	.....	229	1,139	937	727	831	251	1,818
Manufactures of	171	60	870	282	719	1,911	364	272
EXPORTS:								
Aluminium and manufactures of	244	175	666	1,330	1,144	1,046	1,101	3,245
Asbestos and manufactures of	93	234	312	404	520	688	687	535
Asphaltum and manufactures of	121	291	702	868	1,170	1,640	1,493	1,016
Cement	163	1,484	2,292	4,349	5,083	5,822	3,382	3,241
Coal	19,502	29,158	40,512	45,013	52,648	65,097	59,921	55,906
Coke	1,233	2,228	3,077	3,300	2,938	3,318	2,789	2,304
Copper, ore and matte	1,009	1,338	1,304	1,095	3,123	2,958	3,257	220
Manufactures of	57,852	86,225	88,004	103,813	113,958	140,164	146,222	99,558
Emery and corundum	170	347	872	1,347	1,654	2,311	2,114	1,802
Gold	48,266	92,594	118,563	22,509	57,328	77,762	112,038	146,224
Graphite	21	43	302	407	452	496	656	520
Iron and Steel:								
Iron ore	79	581	1,637	2,496	2,806	3,684	3,401	1,277
Pig iron	.....	828	1,353	2,475	2,658	4,141	2,859	2,071
Scrap iron and steel	749	270	281	794	1,196	1,435	841	359
Manufactures of	118,039	133,630	177,497	227,454	264,299	299,029	247,779	223,457
Lead, manufactures of	205	499	481	729	626	589	2,610	1,117
Marble and Stone:								
Unmanufactured	120	227	413	607	688	609	676	443
Manufactures of	1,556	1,055	1,034	1,082	1,179	1,626	1,470	821
Nickel, nickel oxide and matte	1,219	3,196	4,532	6,004	8,749	9,275	9,403	11,110
Manufactures of	.....	97	80	252	42	.....	.....	.....
Oils, mineral	75,611	79,793	99,090	98,115	112,472	137,237	152,174	133,693
Phosphate rock	6,376	6,886	7,454	9,068	8,982	9,524	10,617	1,742
Plaster of Paris	.....	16	6	16	20	391	283	189
Platinum	61	10	43	105	178	.....	.....	.....
Quicksilver	556	653	256	20	14	21	32	155
Salt	55	190	286	329	383	441	542	616
Silver	56,712	48,848	55,286	64,749	64,890	71,614	54,965	50,942
Tin, scrap	44	29	64	46	77	.....	.....	.....
Manufactures of	387	721	879	999	1,234	1,453	1,477	1,786
Zinc, ore and dross	1,205	1,765	881	949	955	690	588	695
Manufactures of	1,669	1,319	196	829	1,350	1,063	406	21,243

XIX. MANUFACTURES

W. M. Steuart

The Manufacture of War Supplies.—The year 1915 was one of recovery from a period of industrial depression, and it was generally admitted that the recovery was due in large measure to the stimulus of the European War. In fact, at no time in the history of the country has the industrial activity been so dependent upon foreign war. The United States was the one great nation which was in a favorable situation to recover from the strain incident to the war, and in the end to make pronounced gains. During the last months of 1914 factors favorable to greater industrial activity were developing. Money was becoming more abundant, lower rates for loans were predominating, and the new sense of security produced by the Federal reserve system rendered industrial enterprise more normal. By March there was a decided improvement, and favorable factors predominated in many industries, especially in iron and steel. Naturally, the industries that lead in the general advance were the manufactures of ammunition, ordnance, and army equipment in general. These were immediately followed by the food and clothing industries, large quantities of the products of which were required by the belligerent nations to maintain their armies, or to make up the deficiency occasioned by such a large proportion of the industrial population being diverted from their normal vocations. The almost total cessation of imports from Germany and the great decrease in those from the other warring nations were also beneficial, because they stimulated the production of commodities for which the domestic consumers had depended very largely upon foreign manufacturers.

The immediate effect of the war was to disorganize export trade and depress domestic industry. It was supposed that this would be followed by a revival of activity in the manufacture of a limited number of products, but it quickly became apparent that industries would be developed by the war which were formerly not considered, except in the most remote degree, to be connected with war. The takings of actual war material, such as explosives and firearms, were rather small up to April 1. But large contracts for arms and munitions had been made, and the buying of large quantities of foodstuffs, clothing, footwear, autotrucks, cotton and woolen goods, harness, and railroad cars, for the direct or indirect use of the immense armies, soon became the striking feature of the industrial activity. By the end of the first half of the year it developed that the United States was the only country in the world that showed a gain in export trade over the preceding year.

To fill the rush orders required increased capacity, and this in turn increased the demand for factory equipment. The demand for machine tools overtaxed the capacity of the plants. By the middle of the year overtime was common in most lines catering to the European demand. In general, there was much less idleness in labor, and in some lines, especially in the manufacture of machinery and machine tools, there was actual embarrassment because of shortage in skilled help. The skilled machinists employed in these industries had been diverted by the large wages paid in establishments manufacturing shells, cannon, and firearms.

Iron and Steel.—During the entire year there was a steady and increasing flow of orders for munitions of war. The steel trade, which is generally accepted as the barometer of

business, was the first to feel the effect of these orders. During the first half of the year the production of pig iron amounted to 12,233,791 tons, exceeding that of the second half of 1914 by 1,437,641 tons. By the last of February the trade was working at fully 60 per cent. of its capacity, as compared with 35 per cent. in December, 1914. In July it was close to the point of full capacity, the output in June having been at the rate of 29,500,000 tons per annum, against only 18,000,000 tons in January. In August the production of pig iron was at the rate of 32,000,000 tons annually, thus establishing a new high record.

The influence of the war on the iron and steel industry was clearly reflected in the statistics of exports and imports. They show a decline in the import trade and a gain in exports of more than 75 per cent. during the first seven months of the year. During the first seven months of 1914, the exports were valued at $959,825, as compared with $1,676,485 in 1915. The exports for July, 1915, amounted to $368,893, and for 1914 to only $114,790. The statement of the U. S. Steel Corporation's unfilled orders as of Sept. 30 showed a total of 5,317,618 tons, as compared with 4,908,455 tons on Aug. 31. The total on the books was the largest since July, 1913, when it amounted to 5,399,356 tons. On Sept. 30, 1914, the tonnage was only 3,787,667 tons. (See also XIII, *Economic Conditions.*)

Automobiles.—The renewed activity in the manufacture of iron and steel was due not only to the demand for ordnance, small arms, and ammunition, but to meet the domestic requirement for additional working equipment in many lines. Among the most important of these was the manufacture of automobiles. There were about 575,000 automobiles of all kinds manufactured during 1914. Some of the important companies made large contracts for foreign deliveries, thus reducing their output for domestic consumption. As there was no perceptible diminution in the local demand, new establishments entered the industry and succeeded in capturing a large trade that would have been impossible if the old companies had been able to meet the domestic requirements. A striking feature was the rapid increase in the exports of both commercial and passenger vehicles, but especially the former, as shown in the following table:

	Commercial			Passenger		
	1913	1914	1915	1913	1914	1915
January...	87	45	935	2,070	2,481	1,803
February..	83	57	1,002	2,388	2,837	2,230
March....	108	50	1,339	2,734	3,538	2,429
April.....	84	52	2,267	2,682	3,239	3,078
May.....	141	99	2,426	2,895	3,157	4,821
June.....	115	90	2,990	2,039	1,982	4,418
July.....	44	50	2,469	1,720	1,265	4,118

During the first seven months of the year, 13,428 commercial vehicles were sent abroad, as compared with 443 for the corresponding period of 1914, and 662 for 1913. For the same period the exports of passenger machines amounted to 22,895 in 1915, 18,499 in 1914, and 16,528 in 1913.

Explosives.—Aside from a normal increase incident to the general increase in all branches of industry, the domestic consumption of explosives in the United States does not vary greatly. Therefore, the increase in exports of munitions is a measure of the effect of the war on domestic production. The exports of cartridges increased from $154,080 in August, 1914, to $3,028,083 in May, 1915. The exports of gunpowder in August, 1914, were valued at $16,821, and of other explosives at $26,336. In October, 1915, the exports of these commodities were valued at $6,593,691 and $10,836,147, respectively. The exports of cartridges, gunpowder, other explosives, and firearms from August, 1914, the beginning of the war, to October, 1915, inclusive, were valued at $121,842,937 (see table overleaf). The capacity of the munition plants was taxed to the utmost. New establishments entered the field and the capacity of existing plants was increased rapidly. (See also XXIV, *Industrial Chemistry.*)

Cotton.—The increase in the production of explosives directed attention to the character of the materials consumed. For the first time it became generally known that large quantities of cotton were consumed in the manufacture of explosives. It

EXPORTS OF ARMS AND MUNITIONS OF WAR

	Cartridges	Gunpowder		Other Explosives	Firearms
		Pounds	Value		
Total, 15 months	$25,175,184	40,221,339	$29,572,903	$53,581,225	$13,513,625
1914					
August	154,080	30,948	16,821	26,336	208,644
September	421,982	193,037	65,465	187,510	210,556
October	1,452,740	90,982	24,395	56,305	692,146
November	1,231,235	63,064	23,027	78,062	1,194,510
December	1,098,875	55,352	27,989	980,665	1,093,158
1915					
January	1,381,970	372,085	129,617	1,059,961	2,156,757
February	1,900,774	73,015	34,884	1,020,904	584,694
March	1,616,626	181,043	65,481	1,081,860	545,716
April	2,648,667	645,690	417,919	2,863,014	464,913
May	3,028,083	1,591,136	1,048,607	4,439,777	1,101,751
June	2,467,378	4,376,677	3,234,549	5,911,186	914,118
July	2,427,761	5,504,772	4,567,929	9,329,303	1,948,717
August	2,284,540	6,653,841	5,296,118	6,967,046	693,413
September	1,412,144	11,183,468	8,026,411	8,743,149	1,147,792
October	1,648,329	9,206,229	6,593,691	10,836,147	556,740

was estimated that, considering all classes of ordnance, there is consumed on the average a bale of cotton to every 150 shots, that every company of 300 soldiers carries three bales of cotton in the shape of cartridges. The cotton used most generally is the short bits of lint removed from the seed in delinting, preparatory to crushing. During the past 15 years the annual output of this product has increased from 115,000 bales, valued at $1,800,000, to more than 800,000 bales, valued at $6,150,000. Just as the cottonseed surplus, after provision for the next planting, was regarded mainly as a nuisance 60 years ago, but is now the basis of an industry yielding primary products worth $156,000,000 a year, so from one of those primary products, the linters, formerly a drawback upon the crushing industry, are derived at least a dozen products of value. Two of these are cellulose, the basis of high explosives, and absorbent cotton, essential to aseptic surgery.

The great demand for linters and hull fiber in the manufacture of explosives exhausted the supply, and more expensive grades of cotton were used, thus assisting in the reduction of the large stocks of cotton that accumulated with the reduction of exports. With the breaking out of the war, the demand for manufactured cotton goods, except for "ducks" and underwear, slackened materially, and while there were occasional spurts of activity, the inquiry for manufactured cotton goods was below normal until the close of December, 1914. Curtailment of production was the natural outcome of such a situation (see XVII, *Agriculture.*) Shortly after the opening of 1915, however, a more active demand set in, and this caused resumption of full time in a number of mills; but activity was not long maintained, and stocks began to pile up in northern establishments. The South was more favorably situated, as is indicated by the fact that the season's operations as a whole again

GROWTH OF THE COTTONSEED INDUSTRY

	1899	1904	1909	1914
Number of active establishments	357	717	810	872
Cottonseed crushed: Tons	2,479,386	3,345,370	3,827,301	4,847,628
Cost	$28,632,616	$51,878,604	$78,111,857	$123,335,299
Average consumption per mill, tons	6,945	4,666	4,725	5,559
Crude cottonseed products, value	$42,411,835	$69,310,624	$107,528,204	$156,036,437
Oil: Gallons	93,325,729	133,817,772	158,328,541	193,333,019
Value	$21,390,674	$31,341,912	$55,327,937	$81,024,392
Meal and cake: Tons	884,391	1,360,172	1,674,545	2,217,378
Value	$16,030,576	$27,766,556	$40,493,513	$56,093,519
Hulls: Tons	1,169,286	1,213,344	1,267,538	1,402,909
Value	$3,189,354	$5,588,814	$7,699,857	$11,206,774
Linters: Pounds	57,272,053	117,792,969	175,773,077	334,116,513
Value	$1,801,231	$4,613,342	$4,006,897	$7,711,752

COTTON CONSUMPTION, TRADE, AND MANUFACTURE

	Year	Cotton (bales)				Active Cotton Spindles
		Consumed	Imported	Exported	On Hand[1]	
December	1914	476,116	32,293	1,202,115	6,654,593	30,438,963
	1913	478,255	15,815	1,230,830	5,189,882	31,004,716
January	1915	493,821	39,229	1,372,183	6,396,018	30,556,330
	1914	540,910	19,624	1,052,272	4,741,643	31,098,178
February	1915	492,711	28,727	1,501,701	5,948,921	30,748,949
	1914	477,629	20,771	751,013	4,174,772	31,139,730
March	1915	558,101	38,534	1,208,573	5,382,930	30,907,382
	1914	518,074	30,863	695,310	3,674,411	31,083,858
April	1915	552,554	54,479	672,035	4,931,644	30,903,509
	1914	526,282	32,917	398,223	3,091,347	31,014,038
May	1915	540,063	46,173	615,290	4,521,802	31,107,221
	1914	493,621	40,114	394,714	2,456,113	31,028,336
June	1915	568,558	39,178	323,140	4,012,054	31,226,001
	1914	473,138	49,010	295,578	1,911,777	30,948,048
July	1915	545,706	35,667	244,477	3,474,890	31,207,965
	1914	471,819	23,790	126,211	1,447,448	30,676,835
August	1915	520,385	18,990	162,721	3,077,275	31,064,519
	1914	408,960	27,087	21,210	1,327,836	30,347,970
September	1915	559,650	26,197	502,031	4,071,280	31,295,104
	1914	442,628	15,315	125,778	2,309,981	30,307,154
October	1915	569,579	13,506	674,655	5,718,626	31,379,385
	1914	482,001	12,150	497,132	4,600,019	30,461,320
November	1915	592,795	21,169	527,625	6,864,066	31,497,435
	1914	447,988	13,454	760,929	6,195,629	30,425,797

[1] Relates to cotton held in consuming establishments and in public storage and at compresses.

establish a new high record for consumption.

In order to increase the consumption of cotton, campaigns were started for the purpose of encouraging people in the use of cotton goods. Displays of cotton goods and various articles made from cotton were held throughout the country, and efforts were made to increase the trade particularly with South America. While the cotton and other textile industries probably received very few war orders, except for "ducks" and underwear, the decrease in imports due to the war gave the domestic manufacturer a chance. (See also XIII, *Economic Conditions.*)

Chemical Industries.—Next to the stimulus given the manufacture of munitions, and the acute situation in the cotton industry, the war had the greatest and most direct effect upon the chemical industries of the United States, and especially on the manufacture of dyestuffs, coal-tar drugs, and fertilizers. The world's market in coal-tar dyes comprises, in round numbers, 900 distinct and different chemical substances which are made by the aid of approximately 300 products of transformation. Broadly speaking, all the rest of the world, outside of Germany, merely assembles intermediates purchased from Germany into finished dyes. In other words, we have been recovering dyestuffs on sufferance from German producers. The world's annual production of coal-tar dyes is valued at, approximately, $100,000,000, and of this the United States produces less than $4,000,000; for this $4,000,000 we are almost entirely dependent upon Germany for the intermediate products, which constitute the basis of our finished dyes.

At the outbreak of the war there was about two-months' supply of dyestuffs in the United States, and this condition was maintained for some months, but by April, 1915, imports had practically ceased. There were but four or five factories capable of producing a limited number of dyes, and as they depended for a part of their raw material on Germany, they were very much restricted in their production. Other factories were installed as quickly as possible to produce the raw material. But the situation became so acute that the Secretary of the Interior called together in conference a number of the leading manufacturers of coal-tar, chemical, and pharmaceutical products for the purpose of determining what aid the Federal Government could render in bringing about an American production of such coal-tar products

as hitherto have been imported. Two definite suggestions were made: first, that a system should be instituted in this country whereby if a foreign patent is not used for manufacture within a reasonable time it will be open to use by American manufacturers; second, that a law should be passed whereby unfair competition through the practice known as "dumping" would be cut off. This practice, which is one of the most serious obstacles in the way of developing the American manufacture of dyes, consists of selling foreign products in American markets at an unreasonably low price. Since Germany's total exports of dyestuffs are more than five times the amount sent to the United States, the selling price of the portion sent to this country can readily be placed below cost as a temporary expedient. (See also XXIV, *Industrial Chemistry*.)

The effect of the war upon the chemical industry is a national awakening to dependence upon foreign countries for products essential to our national welfare. Pyrites is the basic raw material for the production of sulphuric acid. This acid is the foundation, not only for the chemical and fertilizer industries, but for a large number of other industries, such as the manufacture of iron or steel wire and the refining of petroleum. A large part of the pyrites comes from Spain. The second most important raw material for the chemical industry is nitrate of soda, or Chili saltpeter, which is largely used in the manufacture of sulphuric and nitric acids and explosives, besides being one of the most important materials in the production of fertilizers. The first effect of the war was to cause a sharp rise in the price, which was quickly followed by a drop, until it reached the lowest record for a number of years. The principal cause was the stoppage of all shipments to Russia, Germany and Austria.

The constant depletion of the natural fertility of the soils, as a result of continued cultivation, makes fertilization an indispensable factor in our agricultural life. The manufacture of fertilizers depends largely upon the supply of potash. Since the declaration of war there has been a comparative stoppage of supplies of potash from abroad. Domestic producers have been endeavoring to make up this shortage by discovering new sources of supply. It is hoped that a sufficient amount can be obtained from the waste products of the beet-sugar industry to be of material aid. But in spite of the many reported discoveries of potash in this country and Spain, and the patenting of many processes for the recovery of potash from feldspar and other rocks containing potash, it is still true that at the present time we are dependent upon Germany for practically the entire supply. (See also XXIV, *Agricultural Chemistry* and *Industrial Chemistry*.)

Ceramic Wares. — Under normal conditions, the United States imports large quantities of ceramic materials and finished wares. Kaolin, or china clay, and ball clay are the chief materials imported. There are deposits of these clays in the United States, but only a small production has been obtained. The American manufacturer has now no foreign competitor in these wares, but he is assured of a return of such competitors within a reasonable time but under conditions more favorable to him than heretofore. It remains to be seen whether he will profit by his present opportunities and be in position to meet successfully the competition when it returns.

General Effects of the European War.—Surveying the whole field, it may justly be said that the European War has been of great value to American industry as a whole. The conditions have forced the nation to create new branches and enlarge the scope of existing phases of manufacture, opened the way to utilize natural resources, and induced manufacturers to extend their markets into foreign fields with prospects of permanent results. A review of the chief industries ministering particularly to the temporary needs of the belligerents shows that the final outcome will be a very material addition to the manufacturing plant of the United States. Part of this plant will be simply anticipatory of the normal growth of the country's mechanical

equipment; part must lie idle in time of peace; but the remainder furnishes at once products needed in the healthy expansion of the industry of the country. Less conspicuous and spectacular, but of far greater permanent value, is the impulse given to the manufacture, on American soil with American raw materials, of a variety of articles for which we have hitherto been dependent upon foreign skill and enterprise. We have suddenly been brought to recognize the unwisdom of shipping vast amounts of crude materials to other countries, and buying them back in manufactured form at a vastly enhanced price. We have likewise come to recognize the absurdity of allowing many natural products of the tropics, of South America, to find their way to Europe, and of paying foreign intelligence and skill to transform them into articles of daily need. Though tariff rates may be too low to permit of increase in some lines of industry under normal conditions, the European War to a large extent temporarily offsets that disadvantage, since there can be, so long as the war lasts, comparatively small imports. Notwithstanding all of the adverse conditions which have prevailed, it is now possible for the United States quickly to adjust itself to the situation and begin a very broad development.

The effort to develop foreign markets for manufactures emphasized the necessity of coöperation, not only in production, but in distribution. If American industry is to hold the trade it secures during the war, it must be in position to meet the changed economic and social conditions in European countries that will come with peace and the resumption of industries in foreign countries. The necessity of greater economies in manufactures was also discussed in many branches of industry, but especially in the textiles and other lines in which active competition may be expected upon the termination of the war.

General Conditions during the Year.—The record of manufacturers for the first half of 1915 is largely one of difficulties encountered and obstacles surmounted. The fundamental soundness of the economic structure was demonstrated by the steady recuperation from the effects of the previous strain. Acute depression in many lines was succeeded by gradually renewed activity, and, in some instances, by rapid recovery. By the close of the year the general industrial situation was, in some respects, better than it was before the outbreak of the war. The agricultural crops of 1914 were unprecedented in economic value, and the great basic facts of soil and crop conditions favored the growing of large crops during 1915 (see XVII, *Agriculture*). International political complications incident to the action of the Government in its endeavor to maintain the freedom of the seas retarded expansion at times (see I, *American History*, and XIII, *Economic Conditions*).

Probably the most serious retarding factor was the continuous downward movement of international exchange. Not only was the lowest quotation made which any person now living has seen, but the American farmers, manufacturers and merchants found their English reimbursements for cotton, wheat, provisions, manufactured articles and munitions of war worth some two per cent. less than their normal face value. Europe was in need of enormous quantities of goods for which she could not pay in goods, and therefore had to pay in securities. If the United States did not accept payment in securities, then Europe would be compelled to meet the situation by reducing her consumption, and a large part of the products would remain in the warehouses of the United States. The situation was a serious matter to the producers of the great commodities which normally constitute the most important part of our foreign commerce. The situation was relieved by an international loan of $500,000,000, the proceeds to be used in the purchase in the United States, for export, of cotton, meats, wheat, copper, horses, iron and steel products, automobiles, wool, clothing, etc., but not of munitions of war. The purchases, necessarily, stimulated directly or indirectly a large proportion of the industries of the country.

(See also XIII, *Economic Conditions*, and XIV, *Banking and Currency*.)

Financial Failures in Manufactures.—The decrease in the number and magnitude of the financial failures of manufacturing concerns was one of the best indications of improved conditions. During the first nine months of the year there were 3,897 failures in manufacturing enterprises, with liabilities amounting to $89,698,009, as compared with 3,221 failures, with liabilities of $94,195,478 during the corresponding period of 1914. The failures decreased in both number and magnitude as the year advanced. The August record was the best the country has made in several years; it shows approximately half as much tied up in business failures as in the same month of 1914. The failures by months, as reported in *Dun's Review*, were as follows:

	Number		Liabilities	
	1915	1914	1915	1914
January..	551	407	$27,041,279	$16,780,939
February.	525	374	9,646,346	6,335,413
March...	504	366	9,524,230	11,528,528
April.....	490	347	9,705,889	6,424,059
May.....	390	322	6,721,884	10,340,189
June.....	404	297	7,604,300	9,568,017
July.....	383	360	5,517,570	9,474,100
August...	352	327	9,197,401	16,168,970
September	298	421	4,739,110	7,575,263

Exports of Manufactured Products.—The steady increase in the volume of exports of manufactured and partially manufactured products is another indication of the improvement in conditions. These exports from January to October, inclusive, were valued at $1,877,366,287, while for the corresponding months of 1914 they amounted to $1,044,993,015. The exports by months are given in the following table:

Labor Conditions.—In some branches of industry there were numerous labor disturbances. The feeling seemed to be that contracting manufacturers should not expect to have, and would not be allowed to have, "all" the profits of this imperative, but transient, activity. The disturbances were, as a rule, settled quickly, and without causing serious embarrassment or delay in meeting obligations. Concessions were made which were natural and unavoidable, under the pressure of orders for war munitions. The abnormal activity and resultant increase in wages in certain lines of industry naturally attracted labor from other and less favored branches, and there was considerable shifting, especially among the skilled mechanics.

The Federal Commission on Industrial Relations submitted its report in the late summer. The Commission found that wage earners have not received a fair share of the increase in wealth; that the condition of American laborers is but little better than in European countries; that the relationship of the employer and employee varies from that of direct contract to a situation where the employee, together with thousands of his fellow-workers, is separated by hundreds of miles from the individuals who finally control his employment, and of whose existence he is usually entirely ignorant; that the evidence was conclusive of the necessity for laborers to have organizations and be properly represented in negotiations with employers; that the sources from which industrial unrest springs, are almost numberless, but can be grouped under four main sources: (1) unjust distribution of wealth and income; (2) unemployment and

	Total, including Manufactures Ready for Consumption		Foodstuffs Partly or Wholly Manufactured		Manufactures for further Use in Manufacturing	
	1914	1915	1914	1915	1914	1915
January.....	$111,132,599	$135,313,157	$29,179,696	$41,143,468	$29,537,534	$30,130,946
February.....	102,330,715	149,656,762	22,153,990	47,675,019	28,491,259	28,538,201
March.....	119,585,317	169,177,099	22,989,066	55,249,913	32,856,618	33,218,673
April.....	113,992,779	175,573,678	19,590,417	46,618,860	31,844,607	38,451,343
May.....	109,112,916	175,247,316	20,117,749	40,828,391	30,431,865	36,872,883
June.....	109,900,929	197,013,906	20,075,216	46,394,585	31,755,039	40,242,472
July.....	100,091,674	208,557,224	17,988,203	47,622,973	29,584,204	42,133,560
August.....	67,162,412	196,142,813	18,596,504	42,240,916	16,208,545	40,712,783
September.....	91,996,905	209,229,849	26,760,785	44,479,716	21,197,243	42,369,753
October.....	49,571,834	223,868,063	37,411,532	53,662,011	28,571,130	41,505,708

denial of an opportunity to earn a living; (3) denial of justice in the creation, in the adjudication and in the administration of law; and (4) denial of the right and opportunity to form effective organizations. The Commission made numerous recommendations, but it seems to have directed its principal efforts to determining how the social lot of this or that class of persons, now dissatisfied with what it has, be improved relatively to the lot of other persons. (See also XVI, *Labor.*)

A committee of the National Civic Federation made quite an exhaustive investigation during the year to determine whether or not labor receives less than its equitable share of the profits of industry. The committee found that of the net earnings of industry in general, about two-thirds is paid out in wages and salaries, and one-third goes to pay interest, dividends and depreciation.

Magnitude of Domestic Manufactures.—Active field work in collecting the reports from manufacturers for the regular Federal quinquennial census of manufactures was started in January. A large force of agents and clerks are employed on this work, and it requires about a year to complete the canvass. Before the close of the year the preliminary totals had been published for a large number of the smaller cities. The following table gives the totals for 120 cities that had been published prior to Dec. 1; the figures show that, notwithstanding the industrial depression of 1914, the industrial activities of the year were, as a rule, greater than during 1909:

	1914	1909
Number of establishments	21,351	19,417
Persons engaged in manufactures	933,798	808,219
Proprietors and firm members	18,073	17,249
Salaried employees	119,672	90,083
Wage earners (average number)	796,103	700,887
Primary horsepower	1,885,378	1,358,230
Capital	$1,561,013,000	$1,910,320,000
Services	623,433,000	467,720,000
Salaries	158,827,000	106,203,000
Wages	464,606,000	361,517,000
Materials	1,661,087,000	1,369,713,000
Value of products	2,794,898,000	2,286,091,000

The census covers the calendar year 1914, and as it requires practically all of 1915 to collect the data from manufacturers, the totals for the United States can not be compiled before the spring or summer of 1916. The figures for 1915, given in the following table in comparison with the census returns for 1909, have been estimated on the supposition that there was a normal increase during the year:

	1915[1]	1909
Number of establishments	331,000	268,491
Persons engaged in manufactures	9,436,000	7,678,578
Proprietors and firm members	330,000	273,265
Salaried employees	1,115,000	790,267
Wage earners (average number)	7,991,000	6,615,046
Primary horsepower	24,901,000	18,675,376
Capital	$25,331,000,000	$18,428,269,706
Services	5,782,000,000	4,365,612,851
Salaries	1,375,000,000	938,574,967
Wages	4,407,000,000	3,427,037,884
Materials	16,514,000,000	12,142,790,878
Value of products	27,726,000,000	20,672,051,870

[1] Estimated.

Anti-trust Laws.—From the standpoint of the Government, the interpretation of the anti-trust laws now devolves primarily upon the Federal Trade Commission, with ultimate recourse to the Federal courts. Manufacturers have been seeking enlightenment in an endeavor to harmonize the various provisions of these laws with those business practices and cus-

toms which are the logical and economic evolution from the greatest constructive period which marks the development of the United States. The U. S. circuit court, in the suit inaugurated by the Federal Government against the U. S. Steel Corporation under the Sherman Anti-trust Act, decided all the questions in favor of the corporation and the individual parties defendant, and declined to issue the injunctions prayed for by the Government and refused to order the dissolution of the corporation. (See also XIII, *The Conduct of Business.*)

PATENTS AND INVENTIONS

WALTER F. ROGERS

The Patent Office.—The Patent Office continues to grant patents in great numbers. The number of patents granted during 1915, excluding trade-mark, label and print registrations, was upwards of 50,000. The total number of patents for inventions at the end of 1915 approximates 1,167,000 in addition to approximately 47,000 design patents and a large number of reissued patents and the registration of trade-marks, labels and prints.

As heretofore, Connecticut leads in patents granted in proportion to population, with the District of Columbia a close second. Then follow in order California, New Jersey, Massachusetts, Illinois, New York, Rhode Island, Colorado, Ohio, Michigan, Oregon, Washington, Pennsylvania, Montana, Nevada, Arizona, Utah, Missouri, Iowa, Minnesota, Delaware, Wyoming, Maryland, Indiana, Wisconsin, New Hampshire, Nebraska, North Dakota, Idaho, South Dakota, Kansas, Vermont, Maine, West Virginia, Florida, Oklahoma, Texas, Hawaii, Virginia, New Mexico, Louisiana, Tennessee and Kentucky. These states vary from Connecticut with one patent to every 947 of the population, to Kentucky with one to every 9,423. There are fewer patents in proportion yet granted in the territories, however, while South Carolina still foots the list of the states, with a proportion of one patent to every 16,406 and preceded in order of the fewest in proportion to the population by Mississippi, Arkansas, North Carolina, Georgia and Alabama.

Germany still leads the foreign countries in the number of patents received with 1,475, followed by England, 1,033; Canada, 667; France, 379; Austria-Hungary, 152; Switzerland, 122. These are followed by Scotland, Sweden, Italy, etc., the list finally dwindling to one each for many of the smaller countries.

During the year the Patent Office has received over $2,250,000 and has spent something over $2,000,000, adding to the surplus nearly a quarter-million dollars, so that the total surplus to date is nearly $8,000,000. In addition to this surplus there are some fifty million patent copies which have been paid for out of the receipts of the Patent Office and are therefore an asset. As these patent copies are sold for five cents each, they have a value, based upon that income, of nearly $2,500,000, so that the actual accumulated surplus of the Patent Office is approximately $10,500,000. These printed copies sell during the year to the number of nearly three millions, bringing in a revenue of approximately $125,000, in addition to nearly a million shipped to foreign countries in exchange and nearly 200,000 used in the Patent Office.

The force of the Patent Office at present is approximately 940, an increase of 41.6 per cent. since 1899, a percentage considerably lower than the percentage of increase in receipts and expenditures, applications printed, copies of patents sold, and written copies of patents supplied. In considering the work of the Patent Office it should be remembered that there is a vast amount of amended work to be done, that is, in considering applications which have been amended in view of a previous action of the Office. There are over 200,000 of these in a year.

The present Commissioner of Patents has succeeded in having his office gain on the work of the large number of pending applications, there

being on hand, awaiting action, approximately 18,000 applications. He has also provided for a revision of proposed interferences before they are declared, resulting in lessening the number of such interferences by 26 per cent. and modifying the issues in ten per cent. A further reduction of the number of interferences has resulted from the large number of applications which have been allowed. Motions to dissolve interferences are now heard by the law examiner, so that the primary examiners are relieved of this burden and the practice is more uniform. Applications which have been pending a long time in the Patent Office are now brought to the personal consideration of the Commissioner, and the number of these has been lessened. The force of the classification division of the Patent Office is being used now with more direct reference to the need of the work by having examiners work directly in the examining division in many instances.

During the year a committee appointed by the Commissioner of Patents has reported on a revision of rules, as appears in the *Official Gazette* of Nov. 9, 1915 (220 *O. G.* 677-683). The proposed amendments are generally self-explanatory and tend to follow the statute, to put into the rules the accepted practice, to make the rules read more clearly, and to rearrange some of them.

Patent Legislation.—A joint resolution of Congress provided for exchanging copies of patents with Canada. A new law provides that there need not be witnesses to applications of the signatures of the inventor or applicant.

The Commissioner in his annual report recommends provision limiting the term of forfeited applications to one year; directs attention to the evils arising from advertising by "attorneys" and suggests the prohibition of the use of the name of any member of Congress or any official of the Government in such advertisements; and recommends a provision for payment or refund of fees in accordance with the report of the Commission on Economy and Efficiency to the Sixty-second Congress (*A. Y. B.*, 1913, p. 541); a provision for higher fees in case of assignments and for an assignee's index; a provision requiring clerks of courts to file decrees in the Patent Office; a law providing that design applications shall be registered and not examined as under the present futile plan; and a provision for *subpoena duces tecum* in interference causes.

It will be recalled that objection was made to the Kahn Act which provided for establishing a branch Patent Office in San Francisco to grant inalienable patents to foreigners for almost anything without consideration (*A. Y. B.*, 1913, p. 543; 1914, p. 511). Fortunately, for some reason, possibly the accident of war, this legislation was rendered innocuous; up to a recent date but one or two applications had been made for patent or registration of a trade-mark under the Act.

It will be recalled that attempts to fasten compulsory license and similar provisions on the patent law in 1912 failed (*A. Y. B.*, 1912, p. 523). At that time the example of England and other countries was cited, but recently the highest authorities in England have condemned the law as a failure and as wrong in principle. The Paige bill, introduced in the Sixty-third Congress (H. R. 19,187), provides for compulsory license, etc., after two years in the case of chemical products and medicines; it will probably be further urged and an endeavor made to pass a law refusing patents for chemical and medicinal products. Such provisions will, no doubt, be vigorously opposed by those interested in maintaining the integrity of the patent system.

XX. TRADE, TRANSPORTATION, AND COMMUNICATION

GROVER G. HUEBNER

MERCHANT MARINE

Tonnage Afloat.—Official figures for the year ending June 30, 1914, show a slight decrease of less than one-half of one per cent. in the number, and an increase of 0.53 per cent. in the tonnage, of the documented merchant vessels of the United States as compared with the previous fiscal year. The number of vessels decreased from 27,070 to 26,943, while the tonnage grew from 7,886,518 to 7,928,688. This small tonnage growth was almost wholly attributable to registered vessels engaged in the foreign trade, a continuation of the tendency which was manifested in 1912 and 1913. In the latter year this class of vessels contributed over one-half and in 1914 practically all of the tonnage increase. Thus, even before the outbreak of the European War, there was a steady gain in registered vessel tonnage since 1910, and the total of 1,076,152 tons on June 30, 1914, exceeded any for the past 28 years.

Of the total registered, enrolled and licensed gross tonnage operating under the American flag on June 30, 1914, steamers contributed 68.5 per cent., sailing vessels 18.1 per cent., barges 12.5 per cent. and canal boats less than one per cent. The decline in sailing-vessel tonnage since 1905 continued in 1914, while the tonnage of steam vessels increased by 91,985 tons or 1.7 per cent. Canal boats showed an increase in number and a decrease in tonnage, while barges increased in both. The operation of the Panama Canal will probably accelerate the decline of the sailing vessel, large steamers designed for this trade forming almost one-fourth of the total tonnage built and documented in 1914. The following table shows the course of the documented marine since 1880:

Year ending June 30	Registered Vessels		Enrolled Vessels		Licensed Vessels under 20 Tons		Total Documented Merchant Marine	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons
1880....	2,378	1,352,810	16,410	2,649,353	5,924	65,871	24,712	4,068,034
1890....	1,527	946,695	15,063	3,391,884	6,877	85,918	23,467	4,424,497
1895....	1,260	838,187	14,408	3,705,104	7,572	92,669	23,240	4,635,960
1900....	1,330	826,694	13,786	4,239,569	8,217	98,576	23,333	5,164,839
1905....	1,372	954,513	14,126	5,391,802	9,183	110,228	24,681	6,456,543
1909....	1,633	887,505	14,072	6,381,053	9,983	120,197	25,688	7,388,755
1910....	1,526	791,825	14,049	6,593,728	10,165	122,529	25,740	7,508,082
1911....	1,703	872,671	13,933	6,640,820	10,355	125,299	25,991	7,638,790
1912....	2,012	932,101	13,912	6,652,686	10,604	129,396	26,528	7,714,183
1913....	2,305	1,027,776	14,001	6,726,340	10,764	132,402	27,070	7,886,518
1914....	2,405	1,076,152	13,836	6,718,974	10,702	133,562	26,943	7,928,688

A preliminary statement of the Department of Commerce reports the total documented merchant marine of the United States on June 30, 1915, as 26,577 vessels of 8,319,486 tons, a decrease of 366 in number of vessels since the same date in 1914 but an increase in vessel tonnage of 390,798 tons. Revised figures indicate that the loss in the number of vessels was overstated and that the tonnage increase was greater than given in the preliminary report, so that 26,701 vessels of 8,389,429 tons is a closer approximation to the eventual official figures of the Bureau of Navigation.

The effect of the Ship Registry Act of Aug. 18, 1914 (*A. Y. B.*, 1914, p. 517) is reflected in this increased tonnage. During the fiscal year 1915, 148 vessels of 523,361 tons were added to the merchant fleet of the United States by transfer from foreign flags. American vessels to the number of 77 were transferred to foreign flags. The total increase of the registered fleet during 1915 is stated to be 389 vessels of 795,391 tons, making the total number of registered vessels of the American merchant marine on June 30, 1915, 2,794, and their total gross tonnage 1,871,543.

Undocumented Craft.—The above figures do not include many undocumented vessels, of which no reliable recent statistics are available, no count having been taken since the 1906 census report, which showed 19,497 such vessels with a gross tonnage of 6,579,402 tons. Detailed figures were given in the YEAR BOOK for 1910 (p. 523).

Geographical Distribution.—As was the case in 1913, the increase during 1914 in documented tonnage was due almost entirely to additions on the Atlantic-Gulf and Pacific coasts, amounting to 52,168 and 56,090 tons, respectively. These two geographical divisions together comprised 60.8 per cent. of the total tonnage on June 30, 1913, and 61.4 per cent. in 1914. Porto Rico increased to the slight extent of 58 tons, while the figures for Hawaii, the northern lakes and western rivers showed decreases. The distribution of vessels and tonnage on June 30, 1914, was as follows:

	Sailing Vessels		Steam Vessels		Canal Boats		Barges		Total	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
Atlantic and Gulf	5,632	965,681	8,402	2,049,482	252	28,057	2,481	752,302	16,767	3,795,522
Porto Rico	85	3,119	20	4,713	....	.....	.....	.....	105	7,832
Pacific Coast	496	260,864	3,028	705,131	....	.....	1,254	118,645	4,778	1,084,640
Hawaii	5	4,345	38	11,991	....	.....	.....	.....	43	16,336
Northern Lakes	241	198,531	2,339	2,523,517	448	48,397	378	112,477	3,406	2,882,926
Western Rivers	.....	.....	1,664	132,692	....	.....	180	8,744	1,844	141,432
Total	6,459	1,432,540	15,491	5,427,526	700	76,454	4,293	992,168	26,943	7,928,688

The following table shows the distribution of the aggregate documented tonnage among the leading customs districts in 1913 and 1914:

Customs Districts	1913	1914
Boston	281,393	286,206
New York	1,770,137	1,806,742
Philadelphia	305,125	323,311
Baltimore	236,887	250,075
San Francisco	515,091	540,428
Seattle	335,383	351,939
Buffalo	269,947	286,215
Detroit	193,145	201,683
Chicago	135,692	123,610
Duluth	928,899	937,374

The total number and tonnage of barges, which are of great importance in the Atlantic Coast trade, undoubtedly exceed the figures given above.

World's Merchant Marine.—The aggregate tonnage of the merchant vessels of the entire world in 1915 was reported by Lloyd's Register to be 49,261,769 tons, as compared with 49,089,552 tons in 1914, 46,970,113 tons in 1913, 44,600,677 tons in 1912, and 43,147,154 in 1911. These figures, it should be noted, are not exact because they include only vessels exceeding 100 tons, because they comprise the gross tonnage of steamers and the net tonnage of sailing vessels, and because the tonnage is stated in accordance with official certificates based on widely varying measurement rules. The number and gross tonnage of steam vessels of the world, as reported in Lloyd's Register, are given in the table at the top of the following page.

The European belligerents own about 70 per cent. of the world's merchant marine. The war has completely immobilized German and Austro-Hungarian shipping on the high seas. It is estimated that the British merchant tonnage available for commerce has been reduced by loss, seizure and, principally, by requisition for government use by more than 20 per cent.

THE WORLD'S MERCHANT MARINE, STEAM VESSELS ONLY

Flag	1900		1914		1915	
	No.	Gross Tons	No.	Gross Tons	No.	Gross Tons
American:						
Sea	690	878,564	1,178	2,069,637	2,580	3,522,933
Lakes	242	576,402	579	2,260,441	600	2,323,397
Austria-Hungarian	214	387,471	433	1,052,346	433	1,018,210
British	7,903	12,149,090	10,123	20,523,706	11,353	21,274,068
Danish	369	412,273	576	770,430	835	854,996
Dutch	289	467,209	709	1,471,710	809	1,522,547
French	662	1,052,193	1,025	1,922,286	1,539	2,285,728
German	1,209	2,159,919	2,090	5,134,720	2,166	4,706,027
Italian	312	540,349	637	1,430,475	1,177	1,736,545
Japanese	484	488,187	1,103	1,708,386	1,155	1,826,068
Norwegian	806	764,683	1,656	1,957,353	2,174	2,529,188
Spanish	422	642,231	589	883,926	642	899,204
Swedish	678	418,550	1,088	1,015,364	1,462	1,122,883
Other countries	1,591	1,432,237	2,658	3,183,097	3,795	3,639,975
Total	15,898	22,369,358	24,444	45,383,877	30,720	49,261,769

Relative Position of American Deep-sea Shipping.—A comparison of the American and foreign carriage of imports and exports by sea in 1914 only serves to emphasize the present deficiency of our merchant marine. The year 1914 shows an absolute decline from $381,032,495 to $368,359,756 in the value of goods transported in American vessels, and a relative decline from 10 to 9.7 per cent. of the total value of goods shipped and received by water. The value of goods carried in cars and other land vehicles, which has increased annually since 1909, also underwent a decline of 6.4 per cent., or $32,795,166. The following table shows the position of the American merchant marine in the carrying trade since 1821:

AMERICAN VESSELS IN THE FOREIGN TRADE

Year	Total Imports and Exports				
	In Cars and Other Land Vehicles	By Sea			Per Cent. in American Vessels
		American Vessels	Foreign Vessels	Total	
1821	.....	$113,201,462	$14,358,235	$127,559,697	88.7
1826	.....	150,331,636	12,238,163	162,569,799	92.5
1840	.....	198,424,609	40,802,856	239,227,465	82.9
1860	.....	507,247,757	255,040,793	762,288,550	66.5
1880	$20,981,393	258,346,577	1,224,265,434	1,482,612,011	17.4
1900	154,895,650	195,084,192	1,894,444,424	2,089,528,616	9.3
1905	242,265,329	290,607,946	2,103,201,462	2,393,809,408	12.1
1908	261,861,952	272,512,228	2,520,740,958	2,793,253,186	9.8
1909	253,580,297	258,657,217	2,462,693,814	2,721,351,031	9.5
1910	319,132,528	260,837,147	2,721,962,475	2,982,799,622	8.7
1911	365,903,334	280,206,464	2,930,436,506	3,210,642,970	8.7
1912	426,116,920	322,451,565	3,109,018,858	3,431,470,423	9.4
1913	505,831,459	381,032,495	3,392,028,429	3,773,060,924	10.0
1914	473,036,293	368,359,756	3,417,108,756	3,785,468,512	9.7

On the basis of vessel entrances and clearances, however, American tonnage during the fiscal year 1915 furnished a greater proportion of the total deep-sea shipping than for many years past, i. e., 28.5 per cent. of the aggregate, as compared with 25.8 per cent. in 1914 and 26.5 per cent. in 1913. This was largely due to the decline in available foreign tonnage rather than to an increase in American shipping, the total entrances and clearances of the latter being only 26,693,736 tons, as compared with 27,470,703 in 1914. The table on the following page contains the official figures of entrances and clearances of American and foreign vessels in the foreign trade of the United States since 1900:

ENTRANCES AND CLEARANCES IN THE FOREIGN TRADE

Year	Total Tonnage	Foreign		American	
		Tonnage	Per Cent.	Tonnage	Per Cent.
1900	56,444,146	44,099,576	78.0	12,344,570	22.0
1905	62,140,758	47,847,126	77.0	14,283,632	23.0
1910	79,941,664	62,214,602	78.0	17,697,062	22.0
1911	85,112,136	65,665,903	77.0	19,446,233	23.0
1912	92,574,983	69,614,418	75.0	22,960,565	25.0
1913	101,791,132	74,772,764	73.5	27,018,368	26.0
1914	106,571,996	79,101,283	74.2	27,470,703	25.8
1915	93,595,554	66,901,818	71.5	26,693,736	28.5

Total Shipping in the Foreign Trade.—While the proportion of American vessel tonnage to the total tonnage entered and cleared increased in 1915, there was an interruption of the steady increase in the total shipping which had occurred since 1900, the actual amount showing a decrease of 776,967 tons, or 2.8 per cent. Entrances decreased from 53,388,587 tons in 1914 to 46,710,466 tons in 1915 and clearances from 53,183,409 to 46,885,088 tons. The following table shows the tonnage entered and cleared in the foreign trade by continents during the fiscal year 1915:

	Entrances	Clearances
Europe	17,477,512	18,661,022
North America	24,126,403	24,101,065
South America	2,461,584	1,943,266
Asia	1,541,746	1,091,448
Oceania	470,034	650,257
Africa	633,187	438,030
Total	46,710,466	46,885,088

Tonnage Built.—The fiscal year 1914, in marked contrast to the three years preceding, evidenced a decrease in the number of vessels constructed. The tonnage built also declined, being 316,250 gross tons as compared with 346,155 tons in 1913, a decrease of 29,905 tons, or 8.6 per cent. The recent tendency toward the construction of fewer vessels and these of greater individual tonnage was apparent in 1914 as in 1913, 46 vessels, or 3.9 per cent. of the total constructed, furnishing 59 per cent. of the total tonnage. This phenomenon may be attributed, as in 1913, to the construction of vessels for the Panama-Canal trade. Seven vessels built for this purpose furnished 24 per cent. of the total tonnage constructed, while three vessels constructed for the Pacific-coast trade contributed 13 per cent. The geographical distribution of the tonnage built in 1912, 1913 and 1914 was as follows:

	1912		1913		1914	
	No.	Gross Tons	No.	Gross Tons	No.	Gross Tons
Atlantic and Gulf coast	545	104,264	597	202,394	554	215,141
Northern Lakes	224	90,898	219	90,907	130	56,541
Pacific Coast	519	32,048	409	44,589	330	36,420
Western Rivers	205	5,286	234	7,930	132	8,009
Porto Rico	10	117	14	260	3	64
Hawaii	2	56	2	75	2	75
Total	1,505	232,669	1,475	346,155	1,151	316,250

Of the total of 316,250 tons constructed during 1914, 205,431 tons, or 64.9 per cent., were steel vessels, whereas in 1913, 231,672 tons, or 66.9 per cent. of the total, were of this nature. A decrease of 11.3 per cent. in steel tonnage construction was thus apparent in 1914 as compared with 1913. As in former years the number and tonnage of sailing vessels continued to decrease. In 1914, of the total tonnage constructed, steamers comprised 224,225 tons, sailing vessels 13,749 tons, barges 75,718 tons, and canal boats 2,558 tons. Although fewer steam vessels were built in 1914 than in the preceding year, the same was true of other classes of vessels, and steam vessels formed approximately the usual proportion of

the total construction. The percentage of steam tonnage to the total tonnage built was 71 per cent. in 1914, 70.3 per cent. in 1913 and 66 per cent. in 1912.

The fiscal year 1915 showed little improvement in shipbuilding, preliminary figures of the Department of Commerce indicating that 1,157 vessels, approximately the same number as in 1914, were built and documented. The tonnage constructed in 1915 was reported to be 225,122 tons. Since the end of the fiscal year, however, many orders have been received by American shipyards (see XXI, *Naval Architecture*).

Ship Subsidies and Mail Payments.—The net cost of the foreign mail service for the fiscal year 1914 was $3,565,323, as compared with $3,691,779 in 1913, $3,195,883 in 1912 and $3,315,349 in 1911. The year thus showed a decrease as compared with 1913 of $126,456, or 3.4 per cent. Owing to the discontinuance of service between Boston and Philadelphia and Jamaica, only five contracts were in force under the Mail Contract Act of March 3, 1891, and subsidies of $1,089,361 were paid, as compared with $1,144,630 in 1913, $983,160 in 1912 and $1,079,945 in 1911. The trans-Atlantic service has suffered by reason of the European War, the German steamers being withdrawn from service, while the English and French lines have allowed but few of their faster vessels to continue in service. It was therefore necessary to make use of any vessels which could be obtained. The parcel-post service with France and Germany was suspended on Aug. 3, 1914.

The Seamen's Act.—The much discussed Seamen's Act became a law on March 4, 1915, and went into effect on Nov. 4 (see also I, *American History*, and XVI, *Labor*). Its provisions are as follows, by sections:

(1) In case of casualty or desertion the master shall obtain an equal number of men and report the fact to the American consul at the first next port of arrival.

(2) On merchant vessels over 100 tons gross except on rivers, harbors, bays and sounds exclusively, sailors shall be divided into two watches, to be on duty successively. Firemen, oilers and water tenders shall be divided into three watches. Seamen are not to be worked alternately in fire room and on deck, and those shipped for deck duty are not to be worked in the fire room, except in case of grave necessity where safety requires it, and in fire, lifeboat and other drills. No seaman is to be required to do unnecessary work on Sundays or holidays except to enable the dispatch of the vessel on time. When in harbor nine hours shall constitute a day's work. Non-compliance with the above rules entitles a seaman to discharge and wages earned, but this section does not apply to fishing or whaling boats or yachts.

(3) Seamen's wages must be paid within two days after termination of agreement, or at time of discharge. In foreign or Atlantic-Pacific voyages they must be paid within 24 hours after cargo is discharged or four days after the seaman's discharge, and in all discharges the seaman is entitled to receive at least one-third of balance due him at time of discharge. The penalty for violation of this section is two days' pay for each and every day of delay. Seamen sharing in the profits of the cruise are excepted.

(4) Seamen may demand one-half of wages earned at every port where their vessel loads or delivers cargo, but such demands may not be made more than once in five days. This applies notwithstanding any release signed, and also to seamen on foreign vessels while in American harbors.

(5) In cases of complaint as to the unseaworthy condition of a vessel, insufficient crew or inadequate stores, the consul shall appoint three persons to investigate, who shall act as provided in Sec. 4557 of the Revised Statutes.

(6) Merchant vessels constructed after the passage of this Act, except yachts, pilot boats or vessels of less than 100 tons register, shall provide not less than 120 cu. ft. and not less than 16 sq. ft. of crew's space for each seaman or apprentice. Separate berths for seamen are required and there shall not be more than one berth above another. The quarters are to be suitable and free from stores or cargo. Hospital quarters are to be provided with at least one berth for every 12 men. Mississippi river boats are to provide similar accommodations in the engine room, protected by awnings, etc. Vessels with more than 10 men on deck must have a proper washing place and one washing outfit for every two men of the watch. The washing place is to be heated; and a separate place must be provided for men employed in the fire and engine room if the number exceeds ten, this to accommodate one-sixth of them at the same time and to have sufficient equipment. Penalty for violation is a fine of from $50 to $500.

(7) Punishments provided for seamen are: for desertion, forfeiture of effects on board and wages; for neglect to join or absence without leave, forfeiture of not more than two days' pay or expenses of hiring substitute; for quitting the vessel at port of delivery without leave and before vessel is in security, loss of not more than one month's pay; for disobedience, placing in irons until disobedience ceases, and

at port forfeiture of not more than four days' pay or at the discretion of the court, not more than 1 month's imprisonment; for continued disobedience or neglect, placing in irons on bread and water with full rations every fifth day until disobedience ceases, and upon arrival in port forfeiture of not more than 12 days' pay for every 24 hours' disobedience or imprisonment; for assaulting master or mate, not more than two-years' imprisonment; for wilfully damaging vessel, stores or cargo, forfeiture of wages equal to the loss, and also, at discretion of court, imprisonment for not more than 12 months; for smuggling, resulting in damage to owner or master, reimbursement and imprisonment for not more than 12 months.

(8) It shall be the duty of consular officers to discourage insubordination and to enlist the assistance of local authorities for this purpose. They shall also inquire into the facts of cases involving cruel treatment.

(9) Corporal punishment is absolutely prohibited, the penalty for violation of this clause being imprisonment for not less than three months or more than two years. The master, if he has knowledge of the misdemeanor, is liable for the surrender of any guilty officer.

(10) The daily allowance of water is increased from four to five quarts and of butter from one to two ounces.

(11) It is unlawful to pay wages to seamen in advance or to pay them to any other person for shipping seamen. Punishment for violation is a fine $25 to $100 and also imprisonment not exceeding 6 months at the discretion of the court. No person is to receive remuneration from a seaman for providing employment; penalty for violation is imprisonment not more than six months or fine of not more than $500.

(12) No wages due seamen shall be subject to attachment by any court, regardless of any previous transfer or assignment of them, except for support of wife and minor children.

(13) No vessels of 100 tons or upward, except on rivers and small inland lakes, shall leave port without sufficient crew, or unless,

(*a*) Seventy-five per cent. of the crew in each department thereof can understand the orders of officers;

(*b*) At least 40 per cent. and ultimately 65 per cent. of the deck crew are of a rating not less than able seamen.

Clearance may be denied vessels violating this section and collectors of the customs may investigate such cases. Violation will subject the owner of the vessel to a fine of from $100 to $500.

(14) Six classes of lifeboats are standardized, and life-saving equipment prescribed. Lifeboats and rafts must be adequate for all persons on board, the minimum number of boats to be determined by the length of the vessel or the number of passengers, whichever of the two requirements shall be greater, and no persons are to be carried for whom no life-saving provision is made. Provision is also made for the adequate manning of boats by certificated lifeboatmen in charge of able seamen and musters and drills are to be held at least once a fortnight. Life jackets of approved type are to be provided for all on board, and also sufficient life buoys, the number being based on the length of the vessel.

(16) Conflicting treaties and conventions with foreign governments regarding treatment of seamen are to be abrogated within 90 days.

(18) The Act shall take effect eight months after its passage as regards vessels of the United States and 12 months thereafter as regards foreign vessels.

(19) The Secretary of Commerce may provide regulations for caring for seamen who from injury or illness require an immediate discharge when the personal appearance of the master before a consul is impracticable.

(20) Persons in authority shall not be considered fellow-servants of seamen in cases of injury in the course of employment.

The Seamen's Act is causing much complaint among American shipowners because it further increases the difference between the operating costs of American and foreign vessels. The complaint is particularly directed against Section 13, and is especially severe on the Pacific coast. Its effect has been practically to drive American shipping in the foreign trade from the Pacific. On Aug. 13 the Pacific Mail Steamship Co. announced the sale of its liners on the ground that the restrictions on the use of Asiatic labor would make it impossible to operate the vessels at a profit. The vessels of the Robert Dollar Steamship Co. have been transferred to British registry and now sail from Vancouver, and the Great Northern Steamship Co. has sold its only remaining steamship, the *Minnesota*. The transfer of Pacific Mail and Great Northern steamers to the Atlantic trade and of other American-owned vessels to foreign flags and Canadian terminals has caused an acute shortage of vessels in the trade between Pacific coast ports and China. Japanese steamship lines are now in a dominant position on the Pacific and naturally give preference to the trade of Japan. It was announced on Dec. 13, however, that seven smaller vessels of the Pacific Mail in the Central-American trade have been purchased by the American International Corporation and will continue to represent the American flag in the Pacific.

Panama Canal Traffic.—Since Aug. 15, 1914, when the first merchant vessels passed through the Panama Canal, traffic statistics have been compiled for the eleven and one-half months ending July, 1915. During this period 1,258 vessels of 6,238,658 gross tons and 4,390,405 net tons and carrying 5,675,261 tons of cargo passed through the Canal. The traffic statistics for each month are stated in the following table:

TRAFFIC OF THE PANAMA CANAL

Months	Eastbound		Westbound		Total		Traffic	
	Vessels	Cargo (tons)	Vessels	Cargo (tons)	Vessels	Cargo (tons)	Gross Tons	Net Tons
1914								
August	11	62,178	13	49,106	24	111,284	120,282	85,978
September	30	180,276	27	141,762	57	322,038	303,446	221,059
October	40	253,288	44	168,069	84	421,357	461,104	328,216
November	38	242,291	54	206,510	92	448,801	452,550	322,731
December	57	271,219	43	179,235	100	450,454	485,672	344,294
1915								
January	54	240,925	44	208,082	98	449,007	490,571	347,212
February	53	276,078	38	150,987	92	427,065	455,344	322,862
March	80	417,610	57	217,447	137	635,057	675,281	475,984
April	60	285,457	59	237,384	119	522,841	569,377	404,539
May	75	332,174	67	246,534	142	578,708	703,805	492,350
June	60	382,561	83	320,619	143	603,180	698,855	497,810
July	77	388,696	93	316,773	170	705,469	821,871	547,370
Total	635	3,232,753	623	2,442,508	1,258	5,675,261	6,238,658	4,390,405

With the exception of the coast-to-coast trade the traffic of the Canal was abnormally low because its international traffic, especially that between western Europe and Pacific countries, was restricted by the European War. Even the trade between the eastern seaboard of the United States and the west coast of South America was abnormal because of the financial and industrial depression which the war occasioned in South American countries. It was estimated when the tolls were fixed that the total traffic of the Canal during the first years of operation would aggregate about 10,500,000 net vessel tons annually. It is gratifying that the coastwise traffic of the Canal, which was less influenced by the war than its international traffic, was considerably greater than had been anticipated. The distribution of the Canal's traffic by routes during July, when the highest point of the period was reached, was as follows:

Route	Atlantic to Pacific			Pacific to Atlantic		
	Vessels	Net Tonnage	Tons of Cargo	Vessels	Net Tonnage	Tons of Cargo
Coastwise	20	66,839	74,170	11	52,372	73,321
Europe—West Coast of North America	5	19,089	9,585	8	28,379	42,049
Europe—South America	4	12,921	11,155	14	51,660	108,010
United States—South America	11	33,893	32,508	25	74,691	110,099
United States—Far East	24	110,535	174,574	5	17,745	29,381
Atlantic terminus—South America	10	13,864	9,816	8	13,011	8,366
Miscellaneous	1	3,067	4,965	5	12,161	17,470
Ballast	18	37,120	.....	1	22	.....
Total	93	297,328	316,773	77	250,041	388,696

The principal west-bound commodities shipped through the Canal were refined petroleum, coal, iron and steel, coke, railroad material, cotton, cement, wire fencing, machinery, tin, miscellaneous manufactured goods and general cargo. The chief commodities east-bound were South American nitrates, which comprised the largest item of Canal traffic, sugar, lumber, iron ore, crude oil, barley, canned goods, copper, zinc

concentrates, cotton, dried fruit, wool and general cargo.

Of the 1,258 vessels which navigated the Canal during its first 11½ months of operation, 540 were British vessels and 526 American. The remainder comprised smaller numbers of Norwegian, Chilean, Danish, Swedish, Japanese, Dutch, Peruvian, Russian, Honduran, French, Italian, Nicaraguan and Panamanian vessels. German vessels were entirely absent because of the European War, although in times of peace Germany conducts a heavy trade with Pacific countries coming within the range of the Panama Canal. (See also X, *The Panama Canal.*)

EXTERNAL COMMERCE OF THE UNITED STATES

Total Foreign Trade.—During the fiscal year ending June 30, 1915, official figures show the value of exports and imports to have been $4,442,759,080, as compared with $4,258,504,805 in 1914, an increase in trade of 4.2 per cent. These totals, however, give no indication of the great readjustment in American commerce caused by the European War. Thus, while in 1914 exports were valued at $2,364,579,148, forming 55.5 per cent. of the total trade, and imports at $1,893,925,657, or 44.5 per cent. of the total, in 1915 exports totaled $2,768,589,340, or 62.3 per cent. of the aggregate, and imports $1,674,169,740, or 37.7 per cent. of the aggregate trade. Heavy shipments to Europe were principally responsible for the increase in exports, while the imports from all continents except Europe and Asia showed a gain. A considerable portion of the customary European shipments to the United States were of course cut off by hostilities. The foreign trade as a whole with Europe, South America, Oceania and Africa showed an increase, while a loss was incurred in North America and Asia. Augmented exports to Europe were alone sufficient to account for an aggregate trade gain, and had neutral commerce been more respected by the warring powers the advancement of American trade would, at least temporarily, have been enormous.

Exports to Foreign Countries.—Never in our history has there been an absolute increase in exports as great as during the fiscal year ending June 30, 1915. Their total value was $2,768,589,340, as compared with $2,364,579,148 in 1914, an increase of $404,010,192, or over 17 per cent. All of this increase has taken place since the end of August, 1914. In the fiscal year 1914 exports had declined 4 per cent. The exports of merchandise by continents for the last four fiscal years are given in the following table:

EXPORTS OF MERCHANDISE, BY CONTINENTS

Continent	1912	1913	1914	1915
Europe	$1,341,732,789	$1,479,074,761	$1,486,498,729	$1,971,432,182
North America	516,837,597	617,413,013	528,644,962	477,081,320
South America	132,310,451	146,147,993	124,539,909	99,323,957
Asia	117,461,635	115,056,620	113,425,616	114,467,505
Oceania	71,936,513	79,102,845	83,568,417	77,764,725
Africa	24,043,424	29,088,917	27,901,515	28,519,651
Total	$2,204,322,409	$2,465,884,149	$2,364,579,148	$2,768,589,340

The cause of the enormous exports was the increase of $484,933,453, or over 33 per cent., in exports destined to Europe; all other continents with the exception of Asia and Africa received less from us than in 1914. The Asiatic increase, furthermore, is attributable to greater shipments to Asiatic Russia, many of which were destined for European consumption. Of the increase in European exports, the greater portion is attributable to Great Britain, France, the Netherlands and Italy. How much of the increased purchases by the two latter countries found their way to Germany and Austria-Hungary can be only surmised. A good deal of the increased demand for food, however, was for home consumption, as the

1914 grain crops of Europe were below normal and the Russian supply was shut in by the closing of the Dardanelles and German control of the Baltic. Our direct exports to Germany declined from $344,794,276 to $28,863,354, greatly encouraging the development in Germany of substitutes for American imports. Exports to South America decreased from $124,539,909 in 1914 to $99,323,957 in 1915, principally because of poor financial conditions throughout that continent and the lack of customary loans by Europe. Merchandise exports to various important markets are shown in the table below:

EXPORTS OF MERCHANDISE, BY PRINCIPAL COUNTRIES

Market	1912	1913	1914	1915
Germany	$306,959,021	$331,684,212	$344,794,276	$28,863,354
Great Britain	564,372,186	597,149,059	594,271,863	911,792,454
France	135,388,851	146,100,201	159,818,924	369,397,170
Canada	329,257,194	415,449,457	344,716,981	300,692,405
Netherlands	103,702,859	125,909,862	112,215,673	143,267,019
Italy	65,261,268	76,285,278	74,235,012	184,819,683
Mexico	52,847,129	54,383,424	38,748,793	34,164,447
Belgium	51,387,618	66,845,462	61,219,894	20,662,315
Cuba	62,203,051	70,581,154	68,884,428	75,530,382
Argentina	53,158,179	52,894,834	45,179,089	32,549,606
Japan	53,478,046	57,741,815	51,205,520	41,514,792

The greatest effect of the war has been on the character of our exports. Some articles show enormously increased, and others diminished, shipments. The greatest gains in exports are to be found in crude and manufactured foodstuffs and food animals. Crude foodstuffs and food animals furnished 5.9 per cent. and manufactured foodstuffs 12.6 per cent. of the total export values in 1914, while in 1915 the former group furnished as much as 18.6 per cent. of the aggregate and the latter 16.6 per cent. Crude materials for use in manufacturing declined by $283,279,855, and formed about 18.7 per cent. of the total as compared with 34 per cent. in 1914. Shipments of manufactures for further use in manufacturing declined $16,764,884, forming only 13.1 per cent. of the aggregate value as compared with 16 per cent. in 1914. The absolute value of finished manufactures increased somewhat, but relatively they declined from 31 per cent. of the total value of domestic exports in 1914 to 29.7 per cent. in 1915. Miscellaneous merchandise had the greatest proportionate increase of any class, being over ten times its value in 1914. The total exports of the various groups of commodities are shown in the table at the top of the following page. (See also XIII, *Economic Conditions*, and XIX, *Manufactures.*)

While munitions of war have been more discussed than any other commodity of export, the total of these had been small up to June 30, 1915, compared with other items. Although they increased by $41,236,641 or 424 per cent. in comparison with 1914, their total value was reported at $50,951,135. These figures do not include shrapnel and certain miscellaneous items not separately stated in the official figures, but even with these added the total does not reach the proportions of our principal exports. The heavier shipments of war munitions did not occur until after the close of the fiscal year 1915. The explanation of the increased exports is mainly found in the food group and particularly breadstuffs. The small crops in Europe in 1914, the closing of the Dardanelles, and German control of the Baltic caused our exports of breadstuffs to rise from $165,302,385 in 1914 to $573,823,676 in 1915, an increase of about 247 per cent. Meat-product shipments totalled $206,003,111, an increase of over 43 per cent. during the year. Sugar shipments increased from $1,839,983 to $25,615,016, or 1,292 per cent.; hides, leather and manufactures thereof from $57,566,261 to $120,727,156, or 110 per cent.; and woolen manufactures from $4,790,087 to $27,327,451 or 470 per cent. War supplies, including horses, mules, har-

IMPORTS AND EXPORTS OF MERCHANDISE, BY CLASSES

Year Ended June 30	Foodstuffs in Crude Condition, and Food Animals	Foodstuffs Partly or Wholly Manufactured	Crude Materials for Use in Manufacturing	Manufactures for Further Use in Manufacturing	Manufactures Ready for Consumption	Miscellaneous	Total
Imports:	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
1900	97,916,293	133,027,374	276,241,152	134,222,045	203,126,341	5,407,979	849,941,184
1901	110,385,208	125,540,654	248,006,751	127,576,924	205,505,580	6,157,048	823,172,165
1902	120,280,302	95,350,256	303,001,868	147,656,292	231,420,820	5,611,410	903,320,948
1903	119,202,674	116,620,623	330,491,084	195,750,847	257,740,815	5,896,825	1,025,719,237
1904	132,223,895	118,222,862	320,794,431	160,233,890	252,812,835	6,754,620	991,087,371
1905	146,130,903	145,355,839	389,160,658	177,827,960	252,349,842	6,665,061	1,117,513,071
1906	134,322,347	140,358,109	414,687,999	220,298,751	307,674,728	9,100,980	1,226,562,446
1907	149,747,693	158,656,263	477,027,174	274,096,464	364,192,884	10,700,947	1,434,421,425
1908	145,577,427	147,008,870	363,823,723	196,320,135	331,204,635	10,406,902	1,194,341,792
1909	164,110,674	165,700,920	451,359,259	222,101,622	299,106,235	9,541,514	1,311,920,924
1910	144,776,636	181,566,572	566,270,770	285,138,373	367,723,367	11,471,712	1,556,947,430
1911	181,194,863	172,006,501	511,362,140	287,785,652	361,422,180	13,454,769	1,527,226,105
1912	230,358,230	196,100,608	555,986,041	293,739,134	360,018,963	17,061,958	1,653,264,934
1913	211,746,500	194,243,220	635,210,201	349,401 928	408,178,764	14,227,681	1,813,008,234
1914	247,947,621	227,644,329	632,865,860	319,275,488	449,318,214	16,874,145	1,893,925,657
1915	223,787,245	284,970,346	575,143,070	237,946,316	336,263,458	16,059,305	1,674,169,740
Exports[1].							
1900	227,347,193	318,126,502	325,589,000	152,890,591	331,955,684	14,854,601	1,370,763,571
1901	246,394,140	336,605,378	397,767,463	148,013,625	317,764,367	13,917,833	1,460,462,806
1902	184,786,389	328,831,350	373,595,243	131,918,311	321,946,540	14,404,028	1,355,181,861
1903	185,308,064	323,244,697	408,442,137	140,666,864	327,468,629	7,100,911	1,392,231,302
1904	135,747,224	308,836,077	461,424,464	174,876,659	348,734,801	5,559,792	1,435,179,017
1905	118,185,098	283,065,098	472,114,493	209,926,174	402,049,798	6,403,980	1,491,744,641
1906	177,216,467	347,385,463	500,536,700	226,210,513	459,812,655	6,791,584	1,717,953,382
1907	167,348,227	345,706,609	593,145,135	259,442,028	480,681,423	7,394,612	1,853,718,034
1908	189,051,824	331,961,663	556,681,462	261,105,883	489,469,958	6,515,567	1,834,786,357
1909	135,693,409	302,555,341	520,907,436	231,186,607	440,229,407	7,783,393	1,638,355,593
1910	109,828,320	259,259,654	565,934,957	267,765,916	499,215,329	8,079,822	1,710,083,998
1911	103,401,553	282,016,883	713,018,206	309,151,989	598,367,852	7,592,542	2,013,549,025
1912	99,899,270	318,838,493	723,008,839	348,149,524	672,268,163	8,155,539	2,170,319,828
1913	181,907,266	321,204,373	731,758,513	408,806,949	776,297,360	8,531,897	2,428,506,358
1914	137,495,121	293,218,336	792,716,109	374,224,210	724,908,000	7,122,449	2,329,684,025
1915	507,064,610	452,767,729	509,436,254	357,459,326	808,634,402	80,816,144	2,716,178,465

[1] Exports of domestic merchandise only.

ness, saddles, aeroplanes, commercial automobiles, tires, wagons, gas oil, fuel oil, barbed wire, horseshoes and surgical apparatus, increased from $28,993,373 to $169,519,826 or 484 per cent. Materials for making munitions, such as lead, zinc, brass, wire rods, steel billets, sulphuric acid and metal-working machinery, show similar increases. The following table shows the export values of the products mentioned in 1914 and 1915 and the percentage increase during the year:

	1914	1915	Increase, Per Cent.
Foodstuffs	$429,955,930	$902,352,375	109
Munitions	8,127,310	50,027,056	515
War supplies	28,993,373	169,519,826	484
Materials for munitions	36,687,817	132,208,817	260
Hides, leather and manufactures thereof	39,476,122	70,014,840	77
Forage	1,584,732	78,366,631	4,845
Textile manufactures	56,257,320	99,300,948	76
Total	$601,082,604	$1,501,790,493	149

On the other hand some of our usually large exports declined. Cotton exports fell from $661,942,534 to $448,191,469; iron and steel and manufactures thereof from $251,480,677 to $225,888,358; agricultural implements from $31,965,789 to $10,304,978; lumber and wood manufactures from $103,179,640 to $49,943,537. Naval stores, phosphate rock, mineral

oils, electrical machinery and copper also showed decreases. While enormous temporary gains have been made in some branches of the export trade as a direct result of the European War, many staple exports suffered serious declines during the fiscal year 1915. (See also XIII, *Economic Conditions;* and XIX, *Manufactures.*)

In addition to merchandise, gold was exported to the value of $146,224,148 and silver to the value of $50,942,187. Large imports of gold were in evidence owing to our excess of exports (see also XIII, *Economic Conditions;* and XIV, *Banking and Currency*).

Exports by Groups of Ports.—Official statistics show the following exports from the various groups of customs districts for the fiscal year ending June 30, 1915:

	1914	1915
Atlantic Coast	$1,304,108,797	$1,739,159,496
Gulf Coast	566,387,662	508,434,734
Mexican Border	16,630,369	14,801,494
Pacific Coast	136,243,148	173,685,617
Northern Border	341,183,200	332,019,531
Interior Ports	25,972	488,468
Total	$2,364,579,148	$2,768,589,340

The Atlantic coast, as might be expected, showed the principal gain, while other groups of ports, except the Pacific, incurred declines.

Exports to American Dependencies.—Shipments to the non-contiguous territories of the United States were valued at $96,234,200 in 1915, as compared with $106,711,680 in 1914, a decline of 9.8 per cent. Every territory showed a decrease, although the greatest occurred in the Hawaiian and Philippine trade. Our territorial trade is still greater in importance, however, than that with foreign markets such as Japan, Argentina, Cuba, Belgium or Mexico. The shipments to non-contiguous territory of the United States in 1914 and 1915 were as follows:

	1914	1915
Alaska	$21,929,460	$20,792,609
Hawaii	25,571,169	20,295,829
Porto Rico	31,754,695	30,149,764
Philippines	27,268,064	24,691,611
Guam	213	33,279
Tutuila	188,079	271,108
Total	$106,711,680	$96,234,200

Imports from Foreign Countries.—The year 1915 saw the first break in the steady increase of our imports since 1911. They amounted to $1,674,169,740 in the fiscal year 1915, as compared with $1,893,925,657 in 1914, a decrease of 11.6 per cent. This is attributable, of course, to the interference of the European War with industry and trade routes, in the face of which fact the decrease seems comparatively small. The distribution of imports by continents was as follows:

IMPORTS OF MERCHANDISE, BY CONTINENTS

Continent	1912	1913	1914	1915
Europe	$819,585,326	$892,866,384	$895,602,868	$614,354,645
North America	334,072,039	361,943,659	427,399,354	473,079,796
South America	215,089,316	217,734,629	222,677,075	261,489,563
Asia	225,468,250	276,494,777	286,952,486	247,770,103
Oceania	36,464,115	37,543,441	42,144,398	52,522,552
Africa	22,585,888	26,425,344	19,149,476	24,953,081
Total	$1,653,264,934	$1,813,008,234	$1,893,925,657	$1,674,169,740

Every continent shows an increase with the exception of Asia and Europe. European imports furnished only 36.7 per cent. of the total, in comparison with 47.2 per cent. in 1914, 49.2 per cent. in 1913 and 49.5 per cent. in 1912. Imports from North and South America, on the contrary, increased by approximately 10 per cent. and 17 per cent., respectively, the North American increase being ascribable principally to Cuba and San Domingo, and the South American gain to Argentina and Venezuela. The value of the imports from the principal countries is shown in the table on the following page.

IMPORTS OF MERCHANDISE, BY PRINCIPAL COUNTRIES

Country	1912	1913	1914	1915
Great Britain	$272,940,700	$295,564,940	$293,661,304	$256,351,675
Germany	171,380,380	188,963,071	189,919,136	91,372,710
France	124,548,458	136,877,990	141,446,252	77,158,740
Brazil	123,881,644	120,155,855	101,329,073	99,178,728
Cuba	120,154,326	126,088,173	131,303,794	185,707,901
Canada	108,813,368	120,571,180	160,689,709	159,571,712
Japan	80,607,469	91,633,240	107,355,897	98,882,638
Italy	48,028,529	54,107,364	56,407,671	54,973,726
Mexico	65,915,313	77,543,842	92,690,566	77,611,691
British India	50,948,901	67,949,259	73,630,880	51,982,703

All of the countries named show decreased exports to the United States with the exception of Cuba. Argentina, however, with exports to the United States valued at $73,776,258, is now entitled to rank with the principal sources of American imports. Of the countries of less importance as sources of imports, the total imports from which aggregate $10,000,000 or over, the following rank in the order given: China, Chile, Straits Settlements, Philippine Islands, Australia, Switzerland, Colombia, Spain, Egypt, Venezuela, Peru, Sweden, Norway, Uruguay and Belgium. The last named was in 1914 eleventh in order of importance.

All of the great groups of imports except manufactured foodstuffs showed a decline in 1915, the decline being greatest in manufactures for further use in manufacturing and manufactures ready for consumption. The former furnished only 14 per cent. of the total import values, as compared with nearly 17 per cent. in 1914, and the latter but 20 per cent. as compared with over 23 per cent. in 1914. Manufactured foodstuffs, on the other hand, showed a slight increase, forming 12 per cent. of the total in 1914 and 17 per cent. in 1915. Crude foodstuffs and crude materials for use in manufacturing bore approximately the same relation to the total as in 1914, 13 per cent. and 34 per cent. respectively.

The imports of sugar, rubber and wool increased, but the remainder of our important import items, such as hides and skins, raw silk, woolen, cotton and silk manufactures, fibres and fibre manufactures, leather, vegetable oils, paper and manufactures thereof, wood, fruits, nuts, iron and steel goods, chemicals, precious stones and coffee, all decreased.

An important feature of the import trade was the decline in the value of the imports of all sections of the country except the Pacific Coast. The latter ports showed an increase of $9,256,303, or 7.1 per cent., in the fiscal year 1914, and an increase of $20,707,041, or 14.9 per cent., in 1915. The following table shows the distribution of the imports of 1915 among the various groups of ports:

	1914	1915
Atlantic ports	$1,374,620,578	$1,212,655,650
Pacific ports	138,151,367	158,858,408
Northern border and lake ports	205,273,412	164,897,211
Gulf ports	120,372,034	102,388,415
Interior ports	22,705,357	14,568,584
Mexican border	32,802,909	20,801,472
Total	$1,893,925,657	$1,674,169,740

In addition to merchandise, gold valued at $171,568,755 and silver valued at $29,110,323 were imported. Large gold imports were a feature of the year (see XIV, *Banking and Currency*).

Imports from American Dependencies.—The value of merchandise imported from the non-contiguous territories of the United States during the fiscal year ending June 30, 1915, is shown in the table below:

	1914	1915
Alaska	$21,480,066	$27,039,470
Hawaii	40,628,200	61,831,381
Porto Rico	34,423,180	42,306,350
Philippines	18,162,312	24,020,169
Guam	.....	.....
Tutuila	71,417	[1]
Total	$114,765,175	$155,197,370

[1] Figures not yet available.

A surprising increase is evident in the shipments to the United States

from outlying possessions, in marked contrast with decreases in 1913 and 1914. This increase aggregated $40,432,195, or 35.2 per cent., as compared with a decrease in 1914 of $13,574,401. The most noticeable gain was in Hawaii, which furnished 39.8 per cent. of the total receipts in 1915, as compared with 35.4 per cent. in 1914. The remaining increase was evenly distributed among the other territories. The total domestic imports from these dependencies exceeded the exports to them by $58,963,170. Foreign merchandise valued at $664,304 and gold and silver valued at $20,660,662 were also received from the noncontiguous territories. Three-fourths of the total bullion came from Alaska. (See also XIII, *Territories.*)

The Balance of Trade.—The following official figures, which include receipts and shipments of both merchandise and specie, indicate the changes in the balance of trade for the past 15 years:

Fiscal Year	Merchandise			Merchandise and Specie		
	Imports	Exports	Excess of Exports	Imports	Exports	Excess of Exports
1900...	$849,941,184	$1,394,483,082	$544,541,898	$929,770,670	$1,499,462,116	$569,691,446
1901...	823,172,165	1,487,764,991	664,592,826	925,609,873	1,605,235,348	679,625,475
1905...	1,117,513,071	1,518,561,666	401,048,595	1,198,646,897	1,660,004,502	461,357,605
1906...	1,226,562,446	1,743,864,500	517,302,054	1,367,226,716	1,848,307,154	481,080,438
1907...	1,434,421,425	1,880,851,078	446,429,653	1,591,878,298	1,988,989,327	397,111,029
1908...	1,194,341,792	1,860,773,346	666,431,554	1,387,337,210	1,991,127,472	603,790,262
1909...	1,311,920,224	1,663,011,104	351,090,880	1,399,879,023	1,810,225,714	410,346,691
1910...	1,556,947,130	1,744,984,720	188,037,290	1,645,504,529	1,918,834,796	273,330,267
1911...	1,527,226,105	2,049,320,199	522,094,094	1,646,770,367	2,136,579,810	489,809,443
1912...	1,653,264,934	2,204,322,409	551,057,475	1,749,251,653	2,326,541,422	576,289,769
1913...	1,813,008,234	2,465,884,149	652,875,915	1,923,470,775	2,615,261,082	691,790,307
1914...	1,893,925,657	2,364,579,148	470,653,491	1,990,790,920	2,531,582,700	540,791,780
1915...	1,674,169,740	2,768,589,340	1,094,419,600	1,874,848,818	2,965,755,675	1,090,906,857

Because of the war, the enormous export balance of $1,090,906,857 appears in the fiscal year 1915, compared with $540,791,780 in 1914. No excess of such magnitude has ever before appeared in the entire history of our foreign trade. (See also XIII, *Economic Conditions.*)

INLAND WATERWAYS AND COASTWISE COMMERCE

Domestic Trade of the Great Lakes.—The official figures of the traffic passing through the American and Canadian Sault Ste. Marie canals in 1913, provided by the Chief of Engineers, U. S. Army, are shown below; figures for 1914 are not yet available:

Commodities	1912	1913
Coal, short tons...	14,931,594	18,622,938
Flour, bbl.....	8,652,153	10,212,667
Wheat, bus.....	174,086,456	204,821,507
Other grain, bus..	69,024,546	112,230,369
Manufactured and pig iron, short tons.....	654,892	402,912
Salt, bbl.....	660,991	730,431
Copper, short tons	116,954	85,378
Iron ore, short tons.....	46,303,423	48,109,353
Lumber, board ft.	667,542,000	599,586,000
Building stone, short tons.....	2,282	6,181
General merchandise.....	1,664,783	1,770,860
Total short tons	72,472,676	79,718,344

The total tonnage passing through the Sault Ste. Marie canals for the year ending Dec. 31, 1913, amounted to 79,718,344 short tons, as compared with 72,472,676 tons in 1912 and 53,477,216 tons in 1911. The increase in total tonnage was due to the increase in coal, flour, wheat and other grain, salt, iron ore and general merchandise shipments. The quantity of manufactured and pig iron, copper and lumber decreased. Practically the same is true of the commerce of the St. Mary's Falls Canal (American) except that in this case lumber shipments increased somewhat. Its total traffic for the year ending Dec. 30, 1913, comprised 37,022,201 short tons, as compared with 26,237,785 short tons in 1912.

Accurate statistics of the commerce passing through the Detroit River are available for 12 consecutive years and

they show a rapid increase since 1904. The following table shows the number of passages, net registered tonnage, estimated freight tonnage and value, for the years 1902 to 1913 inclusive:

	Number of Passages	Net Registered Tons	Freight Tons Estimated	Estimated Value
1902	33,000	39,328,689	44,260,506	$440,834,640
1903	33,113	37,453,796	46,817,245	471,917,830
1904	29,472	33,049,984	42,792,326	453,598,656
1905	35,599	45,912,622	55,508,360	522,888,751
1906	35,128	50,673,897	63,808,571	662,971,053
1907	34,149	53,959,769	71,226,895	697,311,302
1908	27,883	40,628,850	54,086,750	614,425,480
1909	32,296	54,668,846	67,789,369	732,803,079
1910	33,638	58,821,282	73,526,602	771,294,055
1911	30,612	52,142,703	66,951,231	745,167,201
1912	33,675	61,606,271	78,671,208	859,089,591
1913	37,473	62,092,149	85,376,705	927,191,016

Vessels to the number of 1,156 used this passage during 1913, of which 917 were steamers, 239 sailing vessels and 38 gasoline yachts. The average tonnage of all vessels using the river was 1,897.

New York State Canals.—The customary decline took place in 1914 in both the tonnage and value of products transported on the New York State canals, the amounts being, respectively, 2,080,850 tons and $28,277,991. Of the total value of products moved, those of the forest comprised 21 per cent., agricultural products 26 per cent., manufactures 3.7 per cent., merchandise 33.5 per cent., and miscellaneous 15.8 per cent.

NEW YORK STATE CANALS

	Tonnage on New York State Canals					Total Quantity	Total Value
	Erie	Champlain	Oswego	Cayuga and Seneca	All Others		
1900	2,145,876	972,867	31,742	130,126	65,330	3,345,941	$84,123,772
1906	2,385,491	740,983	172,228	164,874	77,331	3,540,907	66,501,417
1907	2,415,548	678,506	143,277	112,570	58,013	3,407,914	63,903,970
1908	2,177,443	614,762	92,831	81,029	85,812	3,051,877	54,511,509
1909	2,031,307	732,125	121,717	84,957	146,430	3,116,536	59,081,572
1910	2,023,185	684,027	110,079	80,125	175,996	3,073,412	59,042,178
1911	2,031,735	770,668	113,891	98,854	81,920	3,097,068	49,577,629
1912	1,795,069	590,723	83,580	80,753	55,991	2,606,116	38,444,617
1913	1,788,453	554,892	61,554	149,874	47,262	2,602,035	36,865,451
1914	1,361,764	492,014	55,705	128,698	42,669	2,080,850	28,277,991

It was expected that the Barge Canal from the Hudson River at Waterford to Oswego on Lake Ontario would be in full commission before the close of the year 1915. The cause of the canal's declining traffic was commented upon in the YEAR BOOK for 1914 (p. 525).

Coastwise Trade.—The state of the coastwise trade on the North Atlantic seaboard during 1914 as compared with the preceding year is illustrated by the coastwise movements at a few of the larger ports. The Philadelphia Maritime Exchange reports 4,170 arrivals and 4,187 departures of coastwise vessels at Philadelphia during 1914, while the figures for 1913 were 4,327 and 4,309 respectively.

The Bureau of Foreign and Domestic Commerce reports that the value of the commodities shipped to the Atlantic and Gulf seaboards from the Pacific seaboard *via* water routes in the fiscal year 1915 totaled $68,097,215, as compared with $34,023,006 in 1914 and $38,621,540 in 1913. It does not report the westbound coast-to-coast trade for the year, but unofficial traffic statistics of the various Pan-

ama Canal steamship lines engaged in that trade indicate that it has increased rapidly. The westbound coastwise traffic carried by the American-Hawaiian Steamship Co. advanced from 274,847 tons in the fiscal year 1914 to 537,079 in 1915; that of the Luckenbach Steamship Co. from 74,161 to 177,982 tons; and that of Atlantic and Pacific Steamship Co. (W. R. Grace & Co.) from 45,477 to 76,069 tons. In addition there were various new steamship line services which did not operate in the coast-to-coast trade before the Panama Canal was opened. Thus, the Panama-Pacific Line (International Mercantile Marine Co.) carried 12,141 tons of westbound coastwise freight in the fiscal year 1915, and certain quantities were also carried by the Emery Steamship Co., the E. J. Dodge Steamship Co., the Arrow Line, the Tallac Steamship Co., and the West Coast Navigation Co. Some westbound freight also moved in tramp vessels and in privately operated vessels or industrial bulk carriers.

During the earlier months of Panama Canal operation about 40 per cent. of the total traffic of the Canal, as currently reported by the canal administration, was coastwise. In later months, although the coastwise traffic continued to grow, its relative position was somewhat less conspicuous because some branches of the international traffic of the canal gradually began to recover from the effects of the war. As is stated above (see *The Merchant Marine*) the coastwise traffic passing through the Canal in the month of July, 1915, aggregated 74,170 tons westbound and 73,321 tons eastbound, a total of 147,491 tons of cargo, or 20.8 per cent. of the entire freight traffic of the Canal during that month.

EXPRESS COMPANIES

As reported by the Interstate Commerce Commission, the 12 leading express companies (enumerated in the table below) operated over an average of 302,696 miles in the fiscal year 1914, as compared with 301,168 in 1913 and 283,303 in 1912. Their aggregate gross receipts from operation were $158,879,059 in 1914, as compared with $168,880,923 in 1913 and $160,121,032 in 1912, a decline of 6 per cent. during the year 1914. Payments for the express privilege also declined from $83,872,497 in 1913 to $79,858,819 in 1914, but total operating revenues nevertheless fell from $85,008,426 to $79,020,240 because of the decline in gross receipts. Total operating expenses declined from $79,215,708 to $77,123,373, while taxes accrued increased from $1,379,258 to $1,492,337. As a result the net operating income of the 12 leading express companies fell from $4,413,460 in 1913 to $404,529 in the fiscal year 1914 chiefly because of a shrinkage in their gross operating revenues.

The following table shows the principal statistical items for each of the 12 companies in the fiscal year 1914:

Company	Gross Receipts from Operation	Express Privilege	Operating Revenues	Operating Expenses	Net Operating Income
Adams	$33,613,441.87	$17,532,431.79	$16,081,010.08	$16,842,652.98	*$965,385.48* [1]
American	45,102,949.38	22,151,806.43	22,951,142.95	23,214,574.71	*644,769.66* [1]
Canadian	3,456,072.45	1,666,472.55	1,789,599.90	1,661,834.32	88,816.24
Canadian Northern	971,947.50	374,704.46	597,243.04	402,993.12	173,092.82
Globe	679,294.05	336,570.54	342,723.51	357,916.90	*27,242.72* [1]
Great Northern	3,296,064.90	1,970,918.11	1,325,146.79	1,086,304.51	193,182.94
Northern	3,054,809.16	1,637,573.15	1,417,236.01	1,093,244.37	263,615.67
Southern	15,992,883.36	8,041,709.15	7,951,174.21	6,878,912.31	890,773.73
United States[2]	19,621,790.39	9,669,188.35	9,952,602.04	10,391,193.62	*572,906.36* [1]
Wells, Fargo	31,862,932.71	15,816,159.38	16,046,773.33	14,600,090.75	1,044,256.56
Western	1,226,873.24	661,285.53	565,587.71	593,655.76	*38,904.74* [1]
Total	$158,879,059.01	$79,858,819.44	$79,020,239.57	$77,123,373.35	$404,529.00

[1] Deficit.

[2] Retired from business on June 30, 1914, its routes being taken over by other express companies included in this table.

Complete statistics for the fiscal year 1915 are not as yet available, but during the year ending Jan. 31, 1915, the gross receipts from operation, excluding revenues from foreign express business, of the Adams, American, Southern and Wells, Fargo express companies, which conduct about 95 per cent. of the entire express business of the United States, underwent a further decline to $131,173,670 from $144,854,480 in the year ending Jan. 31, 1914. This resulted in a further decline in their operating revenues from $71,264,974 to $64,703,119, although the amounts paid for the express privilege fell from $73,589,507 to $66,470,551. Their operating expenses also declined from $70,011,536 to $65,835,930; yet their total net operating revenue because of the severe decline in gross receipts, fell from $1,253,438 to a deficit of $1,132,812. Increased taxes, moreover, increased this deficit so that the net operating income of these companies declined from $68,969 in the year ending Jan. 31, 1914 to a deficit of $2,380,894 in the year ending Jan. 31, 1915.

On March 16, 1915, as a result of this poor showing, the four express companies mentioned petitioned the Interstate Commerce Commission for permission to change the rate-making system which the Commission had enforced (*A. Y. B.*, 1913, p. 557; 1914, p. 527) by transposing the collection and delivery-service allowance of 20 cents per package and the rail terminal allowance of 25 cents per 100 lb. This they contended would increase their gross receipts by approximately 3.86 per cent. The Commission found that although the number of shipments handled increased from 191,644,891 in 1914 to 193,870,819 in 1915, or 1.16 per cent., the average charge per shipment had declined from 75.59 cents to 67.66 cents, or 10.49 per cent.; and that the companies' gross and net revenues had declined as shown in the preceding paragraph. It decided that "while the financial condition of certain of the petitioners is more favorable than that of others, it clearly appears that as a whole they are operating at a loss. We are therefore of the opinion and find that petitioners' present revenues are not adequate, and that additional revenues are necessary in order that they may maintain the required standard of service." The petition for a change in the system of arriving at express rates so as to reduce the rail terminal allowance from 25 to 20 cents per 100 lb. and to increase the collection and delivery service from 20 to 25 cents per shipment was granted. (35 I. C. C. Repts. 3, July 14, 1915.)

THE POST OFFICE

Cost of Postal Service.—The total revenues, expenditures and excess receipts and payments of the Post Office, as reported by the Post Office Department, are shown for the years since 1900 in the table below:

	Postal Revenues	Postal Expenditures	Deficit
1900	$102,354,579	$107,740,267	$5,385,688
1905	152,826,585	167,399,169	14,572,584
1906	167,932,782	178,449,778	10,576,996
1907	183,585,005	190,238,288	6,653,283
1908	191,478,663	208,351,886	16,873,223
1909	203,562,383	221,004,103	17,441,720
1910	224,128,657	229,977,225	5,848,567
1911	237,879,823	237,648,926	230,897[1]
1912	246,744,015	248,525,450	1,781,435
1913	266,619,525	262,067,541	4,551,984[1]
1914	287,934,565	283,543,769	4,390,796[1]

[1] Excess revenue.

This shows a surplus (the fourth since 1837) for 1914 of $4,390,796, as compared with a surplus of $4,551,984 in 1913. While the rates for parcel post (which was largely responsible for the surplus in 1913)

were reduced, the volume of business very greatly increased. The distribution of expense among the various services is shown below:

	1900	1912	1913	1914
Service in Post Office	$51,214,498	$116,517,402	$123,454,470	$134,633,166
Railway mail service	8,839,767	20,711,675	22,925,614	26,265,352
Rural delivery service	420,499	41,889,523	45,702,413	47,443,711
Railway mail pay	37,315,724	51,691,301	51,959,387	56,155,496
Other means of transportation	7,794,212	13,288,790	13,375,142	15,037,105
Transportation foreign mail	2,155,567	3,917,371	4,258,621	3,768,101

Nature of the Various Services.—The length, annual travel and rate of expenditure for the various classes of mail services other than star routes are shown for the fiscal year ending June 30, 1914, in the table below:

	Number	Aggregate Length	Annual Travel (Miles)	Annual Rate of Expenditure
Star routes in Alaska	20	3,836.00	206,269.00	$190,817.38
Steamboat routes	253	32,241.95	5,572,435.42	808,281.75
Mail-messenger routes	7,910	5,397.35	12,487,564.40	2,019,247.40
Pneumatic tube routes	6	56.84	.....	966,368.40
Wagon routes (in cities)	289	1,385.18	5,705,451.33	2,366,035.74
Railroad routes	3,502	231,398.24	481,443,001.99	50,853,360.07
Railway post-office cars	.....	.....	.....	4,627,200.72
Electric and cable car routes	559	7,932.28	13,151,943.56	762,205.39
Total	12,539	282,247.84	518,566,665.70	$62,593,516.85
Star routes in Alaska (emergency)	.....	.....	.....	$71,806.78 [1]
Steamboat routes (pound rate)	.....	.....	.....	108,780.25 [2]
Railroad transportation, misc.:				
Periodical mails	.....	.....	.....	706,154.33 [2]
Mail weighings, etc	.....	.....	.....	288,370.95 [2]
Freight on mail bags, postal cards, etc	.....	.....	.....	504,170.55 [2]
Railway mail service (officers, clerks, etc.)	.....	.....	.....	26,107,051.97 [3]
Miscellaneous expenses	.....	.....	.....	135.60 [2]
Total inland service	.....	.....	.....	$90,379,987.28
Foreign mails:				
Aggregate cost	.....	$3,868,364.72	.....	.....
Less intermediary services to foreign countries	.....	303,040.83	.....	3,565,323.89
Total	.....	.....	.....	$93,945,311.17

[1] Authorization. [2] Actual expenditures. [3] Estimated actual expenditures.

As the total rate of expenditure in 1913 was only $86,102,137.54, the year 1914 as a whole shows an increase of $7,843,173.63, or 9.1 per cent.; while the inland service cost, amounting to $90,379,987.28 as compared with $82,410,358.39 in 1913, shows an increase of 9.1 per cent. This is attributable to the increased volume and weight of mail; the establishment of additional services by wagon; changes in the weight limit and rates of postage on parcel-post packages in the local, first and second zones, which increased the weight of mail carried by railroads; higher cost of steamboat service due to the parcel post; extensive weighing of mail; and increased shipments of empty equipment because of demands for moving parcel post and post cards. The decrease in the cost of foreign mails was due to the discontinuance of service on the Boston, Philadelphia and Jamaica route, formerly provided under contract.

Railway Mail Pay.—Payments to railroads in 1914 aggregated $56,155,496 as compared with the following in previous years:

1910	$49,405,311
1911	50,583,123
1912	51,691,301
1913	51,959,388

A bill providing for the readjustment of compensation to railroads passed

the House during the final session of the Sixty-third Congress, and another bill was introduced in the Senate by the joint committee of Congress authorized to investigate the question. The provisions of the two bills were similar in regard to the adoption of space instead of weight as a principal basis for determining compensation. The joint committee's bill, however, fixed rates absolutely, while the House bill fixed maximum rates. The committee's bill rates moreover were higher than those contemplated by the House bill. The railways object seriously to the reduced charges contemplated in the House bill and point to the favorable report which was made by the joint committee after lengthy investigation. (See, for further discussion, *A. Y. B.*, 1914, p. 529.)

The Parcel Post.—The previous six months' growth in the parcel-post business continued during 1914. A count in April, 1914, showed an increase in the number of parcels handled of 146 per cent. over the count made in October, 1913, and an October, 1915, count shows an increase of 10 per cent. over the April, 1914, count. It is estimated that the service is handling 800,000,000 to 13,000,000 insured parcels annually. The reduction in 1913 of the cost of insuring parcels increased this branch of the business from an annual average of 5,000,000 to 13,000,000 insured parcels. The utility of the c. o. d. privilege inaugurated in July, 1914, was demonstrated by nearly 3,000,000 parcels handled in this manner and total collections of over $14,500,000. The regulation placing books in the fourth-class and entitling them to the parcel-post privilege, moreover, became effective March 16, 1914; and the regulations have been modified so as to permit the sending of matter in bulk by freight or express for mailing by individual pieces at a post office within the first or second zone from the offices of address. Such parcels otherwise would not move by parcel post because of the higher zone rates applicable.

TELEGRAPHS AND TELEPHONES

Telegraphs.—The YEAR BOOK for 1914 contained (p. 532) a comparison of the telegraph industry in 1907 and 1912 as reported by the United States Census Bureau. Complete data for later years are not available, but the principal business operations of the Western Union Telegraph Co., which largely controls the telegraph business in the United States, are shown in the following table for the fiscal years ending Dec. 31, 1913, and Dec. 31, 1914:

	1913	1914
Stock (issued)	$99,786,758	$99,786,758
Funded debt	$28,745,000	$28,745,000
Miles of wire	1,576,639	1,581,571
Offices	25,060	25,784
Total income	$46,899,268	$47,287,388
Expenses	$42,327,122	$40,578,751
Net revenue	$4,572,146	$6,708,637
Interest, etc	$1,337,229	$1,337,242
Net profits	$3,234,917	$5,371,395
Cash dividends	$2,992,246	$3,988,886
Appropriated for Reserve		$1,000,000
Surplus for year	$242,671	$382,509

The corresponding operations of the principal competitor of the Western Union Telegraph Co., the Mackay Companies, a voluntary association of many allied telegraph companies, which controls the Commercial Telegraph Cable Co. and through it the system known as the Postal Telegraph, were as follows during the fiscal years ending Feb. 1, 1914, and Feb. 1, 1915:

	1914	1915
Common stock	$41,380,400	$41,380,400
Preferred	50,000,000	50,000,000
Income from investments in other companies	4,202,413	4,246,014
Operating expenses	30,588	60,584
Balance	4,171,825	4,185,430
Dividends	4,069,020	4,069,020
Surplus for year	102,805	116,410

Telephones.—The YEAR BOOK for 1914 (p. 529) showed a comparison of the telephone industry in 1907 and 1912 as reported by the United States Census Bureau. Complete data for later years are not available, but the operations of the American Telephone and Telegraph Co. in 1913 and 1914 were as follows:

	1913	1914
Capital stock	$344,616,300	$344,681,900
Funded debt	$159,591,000	$159,505,000
Stations[1]	8,133,017	8,648,993
Miles of wire	16,111,011	17,475,594
Total earnings	$45,909,991	$46,196,599
Net earnings	$40,576,746	$40,557,977
Net income	$32,920,090	$32,334,814
Dividends	$27,454,037	$27,572,675
Surplus for year	$5,466,053	$4,762,139

[1] Including stations of local, coöperative and rural independent lines associated with or acting as connecting lines.

The combined operations of the entire Bell System, including subsidiaries (except the Western Union Telegraph Co.), and excluding all duplications, are shown below for the years ending Dec. 31, 1913 and 1914:

	1913	1914
Gross earnings	$215,572,822	$225,952,123
Operating expenses and taxes	86,700,329	93,613,216
Maintenance and depreciation	70,182,970	73,091,628
Net earnings	58,689,523	59,247,279
Interest	16,652,624	18,940,641
Net income	42,036,899	40,306,638
Dividends	30,301,705	30,304,186
Surplus for year	11,735,194	10,002,452

STREET AND ELECTRIC RAILWAYS

The latest detailed and complete statistics covering all the street and electric railways of the United States are the United States Census returns of 1912, which were summarized in the YEAR BOOK for 1914 (pp. 532-534). The unofficial reports of the *Electric Railway Journal* indicate that construction and electrification have made further progress, approximately 1,018.9 miles of track being added in the calendar year 1913 and 946.38 miles in 1914. The latter figure includes 229.94 miles of steam-railroad lines which were electrified in 1914. The principal additions to mileage were made in Connecticut, Minnesota, Utah and Iowa. The number of cars ordered by electric railways in 1914 was 3,010, as compared with 5,514 in 1913; and of the total ordered in 1914, 2,147 were urban, 384 interurban, and 479 freight and miscellaneous cars.

RAILROADS

Physical Condition and Services.—The single-track mileage of all the railroads included in the statistical abstract issued by the Interstate Commerce Commission on March 31, 1915, was 247,398. This return represents the mileage on June 30, 1914. On the lines included there were 64,760 locomotives, 1,382 more than in 1913; and 2,503,822 cars, 58,314 more than in 1913. Of the total cars in service, 2,325,647 were in the freight service, 53,466 in the passenger service, and 124,709 in company service. The total number of employees, not including those in the employ of roads the gross operating revenues of which were reported as less than $100,000 or those in the service of switching and terminal companies, was 1,695,483, a decrease of 119,756 since the same date in the year 1913.

During the fiscal year 1914 the railways covered by the abstract carried 1,053,138,718 passengers, an increase of 19,459,038 over the corresponding returns for 1913; and the total freight carried, including freight received from connections, was 1,976,138,155 tons, a decrease of 81,897,332 as compared with the tonnage carried in the preceding year. The aggregate ton mileage was 288,319,890,210, or less than the ton mileage of 1913 by 13,078,861,898.

Operating Revenues.—The operating revenues in the fiscal year 1914 of the lines included in the Commission's abstract of March 31, 1915, was $3,047,019,908, as compared with $3,125,135,798 in 1913. The official returns of the Commission for the fiscal year 1915 are not yet available. Unofficial returns published by the Bureau of Railway Economics, Washington, D. C., however, indicate a decline to $2,889,029,475 in the fiscal year 1915. These unofficial returns show the sources of the operating revenues of the railways in 1915 to be approximately as follows: freight services, $1,988,594,599; passenger services, $630,177,652; mail services, $57,021,857; express services, $69,043,509;

and other operating revenues, $144,191,858.

Operating Expenses.—The operating expenses of the lines covered by the Commission's abstract of March 31, 1915, were $2,200,313,159 for the fiscal year 1914, as compared with $2,169,968,924 in 1913. Unofficial figures, however, show a decrease to $2,032,689,894 for the fiscal year 1915. The unofficial returns of operating expenses for the year 1915 were distributed as follows: maintenance of way and structures, $365,968,225; maintenance of equipment, $498,871,462; traffic, $59,464,699; transportation, $1,017,797,060; general expenses, $74,646,471; and all other expenses, $15,941,987.

Net Income.—The net operating revenue as officially reported by the Interstate Commerce Commission in its abstract of March 31, 1915, decreased from $955,166,874 in 1913 to $846,706,749 in 1914. Unofficial figures of the Bureau of Railway Economics indicate, however, that there was an increase during the fiscal year 1915 to $856,339,581. The increase was caused by the unusual decrease in operating expenses, particularly by the decrease in maintenance expenditures, a portion of which are probably deferred to some future date. The operating ratio, which was officially reported as 69.30 per cent. in 1913 and in 1914, was unofficially reported to be 70.4 per cent. in the fiscal year 1915. Unofficial returns indicate a decline of 2.3 per cent. in the operating ratio during the current year.

"Net corporate income," the net income remaining after all income has been included and all expenses deducted, was officially reported to be $347,206,000 in 1914, as compared with $488,546,479 in the fiscal year 1913. Complete data for the year 1915 are not at present available, but incomplete returns indicate that the decline in net corporate income during recent years has been temporarily checked. (See also XIII, *Economic Conditions.*)

Capitalization.—The increase in capitalization noted in previous years continued during the year 1914, the total outstanding railroad securities increasing from $19,796,125,712 in 1913 to $20,247,301,257 in the fiscal year 1914. The assignments of capitalization, as reported by the Interstate Commerce Commission, were as follows:

Classes of Securities	1912	1913	1914
Common stock	$6,882,813,008	$7,231,515,045	$7,304,479,846
Preferred stock	1,586,747,679	1,379,096,282	1,376,279,858
Mortgage bonds	8,019,700,886	8,186,366,426	8,496,370,538
Collateral trust bonds	1,279,128,266	1,189,636,796	1,182,683,530
Plain bonds, debentures and notes	1,067,567,350	1,107,076,783	1,142,016,070
Income bonds	263,441,054	250,290,655	254,230,505
Miscellaneous funded obligations	116,170,300	82,858,275	72,700,640
Equipment trust obligations	318,182,259	369,285,450	418,540,270
Total	$19,533,750,802	$19,796,125,712	$20,247,301,257

The reported capitalization of the railroads in 1913 and 1914 may be compared with the reported investment in road and equipment aggregating $16,424,359,514 in 1913 and $16,936,697,840 in 1914.

Dividends.—The railroads included in the Commission's abstract of March 31, 1915, declared dividends in the fiscal year 1914 aggregating $379,865,024, as compared with dividends $327,457,000 in 1913 and $400,309,000 in 1912.

Physical Valuation.—The Division of Valuation of the Interstate Commerce Commission has made such progress in its engineering field work that the director has announced that in the future this work may be expected to proceed at the rate of 50,000 miles per year, and that the entire railway mileage of the United States will probably be covered by Jan. 1, 1920. The accounting and land subdivisions have also been organized to collect additional data, which, together with the reports of the engineering subdivision, will be used in determining the various items of railroad value called for by the Act of March 1, 1913 (*A. Y. B.*, 1913, pp. 1, 567, 576).

Meanwhile many disputed questions relative to method, definition, and inclusion or exclusion of particular items of value have arisen. The Commission is at present considering the many questions of detail which are involved in an endeavor to formulate general rules and plans for the future. The carriers, through a conference committee of presidents, filed a detailed statement preparatory to the oral argument made before the Commission on Sept. 30 and Oct. 1 and 2. The representatives of various state commissions who were present at the oral argument were given 60 days in which to file a brief.

Railroad Consolidation.—There have been no important changes in inter-railway consolidation since those which were mentioned in the YEAR BOOK for 1914 (p. 536). The form of consolidation was changed in various instances, but there has been no shifting of large railway lines from one consolidated group to another. On Feb. 20, 1914, the shareholders of the Atlantic Coast Line Co. approved the plan, which became effective March 10, 1914, whereby its capital stock was reduced and the control of the Atlantic Coast Line Railroad Co. passed out of the hands of the holding company. The plan to merge the New York Central & Hudson River Railroad Co. and the Lake Shore & Michigan Southern Railway Co. and the companies which they controlled was also put into effect. The new company, the New York Central Railroad Co., which was formed on April 29, 1914, was ratified by the stockholders of the companies and by the public-service and railroad commissions of the various interested states, and the agreement of consolidation was filed with the secretaries of state of the states on Dec. 22 and 23, 1914. The suit instituted in February, 1914, by the U. S. Department of Justice to compel the Southern Pacific Co. to dispose of its interest in the Central Pacific Railway Co. is still in progress. (See also *Rulings of the Interstate Commerce Commission, infra.*)

Railroad Receiverships.—Although the number of railroads operated by receivers had gradually increased since 1907 the bankruptcy of the Rock Island, Missouri, Kansas & Texas, Missouri Pacific, Western Pacific, Georgia and Florida and various smaller lines in 1915 raised the problem of railroad bankruptcy to a position of unusual prominence. According to a compilation of the *Railway Age Gazette*, 69 railroads were in the hands of receivers on Jan. 1, 1915, aggregating 21,048 miles of line and with outstanding capital stock of $434,599,738 and funded debt of $830,728,790. During the year the following lines were added to the list:

Receiverships since January 1, 1915	Miles	Outstanding Stock	Total Funded Debt
Algoma Central & Hudson Bay	332	$10,000,000	$10,080,000
Atlantic Northern	17	150,000	100,000
Boca & Loyalton	55	1,200,000	418,000
Chicago, Rock Island & Pacific	7,847	74,877,200	215,255,000
Crooked Creek R. R. & Coal Co	18	112,500	112,500
Florida Railway	59	1,166,000	1,189,965
Georgia & Florida	350	8,750,000	8,452,000
Inverness Railway & Coal Co	61	7,500,000	2,131,000
Kansas City, Ozark & Southern	15	.....	.....
Missouri, Kansas & Texas	3,865	76,300,300	120,073,000
Missouri Pacific	7,285	83,251,085	161,910,500
Pacific & Idaho Northern	90	2,929,800	1,816,000
Western Pacific	946	87,779,800	123,119,000
Total since Jan. 1, 1915	20,940	$354,016,685	$644,656,965
Total, Jan. 1, 1915	21,048	$434,599,738	$830,728,790
Total	41,988	$788,616,423	$1,475,385,755

On Oct. 15, 41,988 miles of line, representing a capitalization of $2,264,002,178 and one-sixth of the entire single-track mileage of the United States, was being operated by receivers. Sixty-six per cent. of the total bankrupt mileage is in the southwestern section of the country, where the

net income of numerous railroad companies has undergone severe shrinkage in recent years and where the outstanding bonds of many are dangerously large as compared with their outstanding capital stock. In addition to the usual financial difficulties of these bankrupt railroads, the Interstate Commerce Commission in the case of two important lines, the Frisco and Rock Island Systems, has reported financial mismanagement (see *A. Y. B.*, 1914, p. 540, and *Rulings of the Inter-State Commerce Commission, infra*).

Freight Rates.—As in the case of the previous year, the year 1915 has been one of great importance to the railroads because of a decision involving their petition for permission to increase the general level of freight rates. On Dec. 18, 1914, the Interstate Commerce Commission reversed its previous decision denying the five per cent. increase requested by the roads in official classification territory (*A. Y. B.*, 1914, p. 538) and allowed the increase on all but a few commodities and classes of traffic (32 I. C. C. Repts. 325, Dec. 16, 1914). In July, 1915, the Commission granted less extensive relief to the roads in western territory.

The Western rate-advance case (35 I. C. C. Repts. 497, July 30, 1915) influenced the general level of freight rates to a smaller extent because the carriers had requested only the advance of rates or minimum carload weights on a small selected list of commodities, and because the Commission refused to grant their petition except in case of a few commodities. The majority of the Commission refused to acknowledge the general inadequacy of the revenues of western carriers as they had in the five per cent. decision, and considered the reasonableness of each of the various suspended commodity rates rather than the reasonableness of the requested advance as a whole. The Commission upheld the increased rates on bituminous coal except as to South Dakota points; on coke; carload rates on brewers' rice and l. c. l. rates on domestic rice; import rates from Gulf points; carload rates on fruits and vegetables; and carload rates on hay and straw where not in excess of class C rates. It also upheld the proposed increase in the minimum carload weight on grain products from 30,000 to 40,000 lb., and in the carload minima on import traffic. It refused, however, to grant permission to increase the carload rates on grain and grain products, live stock, packing-house products and fresh meats (except between Missouri River points), fertilizer and fertilizer materials, broom corn, and cotton piece goods; nor did it permit the carriers to increase the any-quantity rates on cotton piece goods.

It was estimated that the proposed advances if put into effect would increase the annual revenue of the western carriers by $7,604,247. The principal advances, however, were refused by the Commission, so that the revenue increase probably does not exceed 21 or 22 per cent. of the amount requested by the carriers. Two members of the Commission dissented from the majority report. On Sept. 25 the western carriers petitioned the Commission for a rehearing and reargument of the western advance rate case. They requested specific findings as to the adequacy of the carriers' revenues and the relation of state and interstate rates. (See also *Rulings of the Interstate Commerce Commission, infra.*)

The average receipts per ton per mile as reported by the Interstate Commerce Commission on March 31, 1915, were 0.733 cents in the fiscal year 1914, as compared with 0.729 cents in 1913; and the average receipts per passenger per mile were 1.982 cents and 2.008 cents respectively in 1914 and 1913. The average receipts per ton per mile and per passenger per mile for the railway system as a whole during the years 1900 to 1914 were as follows:

Year	Receipts per Ton per Mile, cents	Receipts per Passenger per Mile, cents
1900	.729	2.003
1905	.766	1.962
1906	.748	2.003
1907	.759	2.014
1908	.754	1.937
1909	.763	1.928
1910	.753	1.938
1911	.757	1.974
1912	.743	1.985
1913	.729	2.008
1914	.733	1.982

RULINGS OF THE INTERSTATE COMMERCE COMMISSION

The following are the leading decisions of the Interstate Commerce Commission during the year:

1. The Five Per Cent. Advance Rate and the Western Rate Advance Case. (See *Freight Rates, supra.*)

2. Commodity Rates to Pacific Coast Terminals and Intermediate Points (32 I. C. C. Repts. 611, Jan. 29, 1915).—Owing to the added competition in the transcontinental business resulting from the opening of the Panama Canal, the railroad carriers petitioned the Commission to modify its previous transcontinental decisions so as to enable them to reduce many of their rates to the Pacific Coast Terminals without being required to reduce them to the same extent on shipments destined to intermediate points. The Commission granted their petition in a large measure by increasing the maximum authorized difference between the rates to the coast terminals and intermediate points.

Since this decision with its resulting rate reductions the transcontinental railroads have again petitioned the Commission for permission to reduce their west-bound transcontinental rates on an additional list of 156 items including several hundred commodities. Hearings began on Sept. 23, the carriers as well as numerous shippers contending that unforeseen canal competition makes further reductions necessary. The petition specifically requested relief from the original long-and-short-haul orders of the Commission in the intermountain cases which established a definite relationship between the rates to intermountain points and Pacific Coast terminals.

3. Commodity Rates to Pacific Coast Terminals and Intermediate Points (34 I. C. C. Repts. 13, April 30, 1915).—In the previous decision (No. 2 *supra*) special consideration was given to the rates on freight destined to points located in so-called "back-haul territory," i. e., a strip of land lying along the Pacific Coast from 200 to 300 miles in width, but these rates were not finally disposed of. On April 30, therefore, the Commission ruled that the rates to intermediate back-haul points should be constructed by adding to the coast-terminal rates not more than 75 per cent. of the local rates from the nearest terminal to destination. The Commission also ruled that the coast terminal rates included in the previous decision shall, in addition to San Diego, Wilmington, East Wilmington, San Pedro, San Francisco, Oakland, Portland, Tacoma and Seattle, apply also to East San Pedro, Cal.; Astoria, Ore.; and Vancouver, Bellingham, South Bellingham, Everett, Aberdeen, Hoquiam and Cosmopolis, Wash.

4. In the Matter of Rates, Practices, Rules and Regulations Governing the Transportation of Anthracite Coal (35 I. C. C. Repts. 220, July 30, 1915).—As a result of an extensive investigation of the transportation of anthracite coal from the Wyoming, Lehigh and Schuylkill regions in Pennsylvania to tidewater points, made pursuant to an order of June 10, 1912, the Commission found the rates on such coal to tidewater and various interior points to be unreasonable, and fixed reasonable maximum rates for the future. It also condemned discriminations resulting from unequal practices regarding trackage arrangements, free transportation to junction points, interest charges, royalty earnings, free use of carriers funds and credit, rentals for the use of certain property, and lateral allowances.

5. In the Matter of Rates, Divisions, Rules, Regulations and Practices Governing the Transportation of Railroad Fuel and Other Coal (36 I. C. C. Repts. 1, July 7, 1915).—In ruling with reference to the divisions received by various southern rail carriers in the transportation of coal destined for carriers' use, the Commission decided that:

A railroad company as shipper is entitled to the same consideration as any commercial shipper and no more, even when the shipment moves in part over the rails of such railroad company. It follows that in such case the carrier is entitled to a division of the joint through rate. But the division must be fixed by the same considerations which would determine divisions upon a through commercial shipment in which the railroad had no interest other than that of carrier.

The divisions now received out of the joint rate on supply coal by the Seaboard Air Line, the Atlantic Coast Line, and the Charleston & Western Carolina Railway Company for the hauls from their junctions were held to be special and abnormal divisions.

6. Permission to increase interstate commutation fares and withdraw various trip tickets was granted in the following decisions: Commutation fares to and from Washington, D. C. (33 I. C. C. Repts. 428, March 22, 1915); Southern Commutation Fares (35 I. C. C. 37, July 8, 1915). These cases were decided largely in accordance with the recommendation of the Commission regarding passenger fares in the five per cent. freight-rate case of July 29, 1914.

7. *In re* the Cummins Amendment (33 I. C. C. Repts. 682, May 7, 1915); Iowa State Board of R. R. Commissioners *et al. v.* Atchison, Topeka and Santa Fe Ry. Co. *et al.* (36 I. C. C. Repts. 79, July 30, 1915).—In the first of these decisions the Commission interprets the Cummins Amendment of March 4, 1915 (see *Federal Legislation, infra*) to "invalidate all limitations of carriers' liability for loss, damage, or injury to property transported caused by the initial carrier or by another carrier to which it may be delivered or which may participate in transporting it." Maximum valuations in live-stock contracts, bills of lading or tariffs were held to be invalid in case of loss or damage caused by the carriers, the actual value of the freight being the only basis for claims. The Commission also ruled that the increased liability created by the Cummins Amendment did not justify the carriers in automatically increasing all their freight rates ten or twenty per cent., as is provided in existing shipping contracts and rate schedules, but that the Commission would consider whatever individual advances were desired and decide each case on its merits.

The second decision applies particularly to live-stock rates in so far as they are affected by the Cummins Amendment. The Commission held that the act abolishes "the whole system of released rates based on agreed valuations as distinguished from actual value" in interstate commerce, but that the carriers may for purposes of rate making base their general rates on known scheduled valuations, and charge excess rates to cover excess value in case the actual value of the live stock shipped exceeds the scheduled valuations. It fixed a table of scheduled valuations for the various classes of live-stock traffic, declared existing rates to be the legal maximum rates for animals whose actual value is not in excess of the scheduled values, and ruled that in case of animals of excess value the excess rates may not exceed present rates by more than two per cent. for each 50 per cent. of excess value.

8. *In re* Financial Transactions, History, and Operation of the Chicago, Rock Island and Pacific Railway Company (36 I. C. C. Repts. 43, July 31, 1915).—Pursuant to an order entered April 24, 1914, the Commission investigated the finances of the Rock Island and in this proceeding severely arraigns some of the officials and directors of the railway and its two holding companies. It points to a loss to the railway company of more than $20,000,000 as the result of various "deals" and "transactions"; also to commissions paid in connection with bond issues aggregating over $1,600,000 and discounts exceeding $17,700,000. The Commission furthermore reports profits to the promoters, officers and directors of the holding companies which it regards as excessive, and refers to numerous financial practices which it considers to be reprehensible. Its conclusion is that "it should be just as grave an offense for an official of a railway to be faithless to his trust for financial gain as it is for an elected official of the government to betray his trust for money reward," and that some limitation should be placed on the issuance of stocks and bonds by common carriers' or holding companies.

9. Section 5 Decisions.—Various decisions were rendered during the year under section 5 of the Interstate Commerce Act as amended by the Panama Canal Act of 1912, some rail carriers being permitted to continue their ownership and control of steamship lines and others being ordered to discontinue such ownership or con-

trol. Instances of the former are the ownership of the San Francisco & Portland Steamship Co., and various boat lines on the Willamette, Columbia and Snake rivers and on Lake Cœur d'Alene by the Oregon-Washington Railroad & Navigation Co. (34 I. C. C. Repts. 165, May 25, 1915, and 33 I. C. C. Repts. 658, April 27, 1915); of certain water equipment on the Chicago River by the Chicago & Erie Railroad Co. (34 I. C. C. Repts. 218, May 29, 1915); and of a boat line operated between Carrabelle and Apalachicola, Fla., by the Georgia, Florida and Alabama R. R. Co. (33 I. C. C. Repts. 633, April 27, 1915). On the other hand, numerous railroads were ordered to dispose of their control of steamship properties. In a case decided on May 7 (33 I. C. C. Repts. 700), the Pennsylvania, Lehigh Valley, New York Central, Rutland, Erie, Delaware, Lackawanna & Western and Grand Trunk railways were denied the right to continue their ownership of their principal Great Lakes steamship lines after Dec. 1, 1915; and in another ruling of July 30 (35 I. C. C. Repts. 692), the Pennsylvania Railroad and its subsidiaries were granted permission to continue ownership of some steamer lines operating on Chesapeake Bay and tributary rivers and denied permission in other instances. The points at issue are whether or not in particular cases there is or might be competition between the affiliated rail and water carriers; and if so, whether or not the control of the water lines by the railway is "in the interest of the public and of advantage to the commerce and convenience of the people," and "will neither exclude, prevent nor reduce competition on the routes by water."

10. Second Industrial Railways Case (34 I. C. C. Repts. 596, July 1, 1915).—Following the original report of the Commission in the Industrial Railways Case (29 I. C. C. Repts. 212), the eastern trunk lines withdrew most of their joint-rate arrangements with industrial railways. Many complaints were filed and the Commission therefore suspended the newly filed tariffs in order to make further investigation. It here divides industrial railways in various groups which are differently affected by the principles laid down by the Supreme Court in the Tap Line Cases (234 U. S. Repts. 1; *A. Y. B.*, 1914, p. 542). The Commission held that the treatment of industrials depends upon the following conditions:

> First, whether the instrumentality performing the service is a *bona fide* common carrier; second, whether the service which it performs between the point of interchange with the trunk line and point of placement on the line of the industrial road is plant service or public transportation; third, whether a charge should be made for such service in addition to the line-haul rate applicable to or from points on the rails of the trunk line at the junction.

The trunk lines were requested to reform their tariffs in the light of the views expressed by the Commission in its report.

On April 27 (34 I. C. C. Repts. 116) a third supplementary tap-line report was issued, the Wisconsin Lumber Co. being awarded reparation in the case of shipments from its mill located in Arkansas on the Louisiana & Pine Bluff Railway.

II. Passenger fares on western railroads.—On Dec. 11 the Commission authorized considerable increases in passenger fares in western territory, recognizing in the decision the increased cost of service not offset by possible economies. The case, which was a part of the western advance rate case (see *supra*), involved nearly 50 railroads. Proposed increases in Illinois, Wisconsin, the Michigan upper peninsula, Minnesota, Iowa, Nebraska, Missouri, north of the Missouri River, and in Kansas on and north of the main line of the Union Pacific, from Kansas City to the Colorado State line, were disapproved, but the Commission held that an interstate basis of 2.4 cents a mile was justified. In Missouri, south of the Missouri River, and in Kansas, south of the main line of the Union Pacific, proposed increases were disapproved, but an interstate basis of 2.6 cents per mile was allowed. Proposed increases from points within which new rates were authorized to points on the main lines in California, Arizona, Utah, Nevada, Colorado, Wyoming, New Mexico, Arkansas, Oklahoma, and Texas were pronounced unreason-

able where the fare would be higher than that constructed on the rate fabric existing to the east. A basing rate of 2½ cents a mile in North and South Dakota and 3 cents in the States south and west was approved. Increases on mileage tickets to make them 2¼ cents a mile north of the Missouri River in Missouri and on and north of the Union Pacific main line in Kansas were approved. A mileage ticket rate of 2½ cents a mile south of the same dividing lines was pronounced justified. Increases in fare to the east of Michigan, Illinois, Iowa, Minnesota, Wisconsin, Nebraska, Missouri, and Kansas, based on rates newly authorized in that territory, the Commission declared reasonable also.

LEADING COURT DECISIONS

The following are the principal court decisions affecting railroads since the last issue of the YEAR BOOK:

1. Northern Pacific Railway Co. *v.* North Dakota (236 U. S. Repts. 585, March 8, 1915).—On reviewing the maximum carload rates on coal which had been established by the state of North Dakota, the U. S. Supreme Court ruled that a "state has a broad field for the exercise of its discretion in prescribing reasonable rates," and that the carriers are not entitled to the same percentage of profits on every sort of business, there being "room for reasonable classification." It ruled, however, that the carrier is entitled to a reasonable reward for the carriage of freight, that the "state cannot select a commodity and require its carriage at less than cost or for merely nominal compensation," and that public interest cannot be invoked as justification of such rates. The Court also ruled that in review cases the Federal courts will accept the facts as stated by the state courts unless: "(1) a Federal right has been denied as the result of a finding shown by the record to be unsupported by evidence, and (2) a conclusion of law as to a Federal right and a finding of fact are so intermingled as to make it necessary to analyze the latter." The maximum carload rates on coal in North Dakota were declared unconstitutional. The decision is of general interest because of its bearing upon the question of judicial review.

2. Norfolk & Western R. R. Co. *v.* Conley (236 U. S. Repts. 605, March 8, 1915).—The North Dakota decision mentioned above was followed in principle, and the West Virginia two-cent fare act was held to be unconstitutional.

3. United States *v.* Delaware, Lackawanna & Western R. R. Co. (238 U. S. 516, June 21, 1915).—In further interpretation of the commodities clause of the Interstate Commerce Act and the Sherman Anti-trust Act as applicable to the anthracite coal trade, the Supreme Court held that

in order to comply with the commodities clause in regard to its transportation of coal a carrier engaged also in mining coal must absolutely dissociate itself from the coal before the transportation begins, and if it sells at the mouth of the mine, the buyer must be absolutely free to dispose of it and have absolute control, nor should it sell to a corporation managed by the same officers as itself, that is contrary to the policy of the commodities clause.

The contract between the Lackawanna and its affiliated coal company was held to be such as to enable the railroad to "control output, sales and prices, and to dictate to whom it should be sold" and consequently to be illegal under the commodities clause and the Sherman Anti-trust Act. (See also XIII, *The Conduct of Business.*)

4. United States *v.* Philadelphia & Reading Coal and Iron Co. *et al.* (U. S. District Court, Oct. 28, 1915).—In its final decree in the long pending litigation against the so-called hard-coal combination, the U. S. district court held that the union of the Philadelphia & Reading Coal and Iron Co. and the Lehigh & Wilkesbarre Coal Co. through the instrumentality of the Reading Company is a combination in restraint of trade and violates the Sherman Anti-trust Act. The defendants were ordered within 90 days to submit a plan for the disposal by the Central Railroad Co. of New Jersey of all stocks and other securities of the Lehigh & Wilkesbarre Coal Co. owned or controlled by it. The Court also held that any

stipulations in leases of coal lands requiring the lessees to ship coal over any particular railroad are void because they violate the anti-trust act. Other charges of the Government were not sustained, including the charge that the lease of the Lehigh & Susquehanna Railroad made between the Lehigh Coal & Navigation Co. and the Central Railroad Co. of New Jersey violates the Sherman Act.

5. United States *v.* Louisville & Nashville R. R. Co. (236 U. S. Repts. 318, Feb. 25, 1915).—The Supreme Court ruled that the Interstate Commerce Commission does not have the power of compulsory inspection of the correspondence of carriers. Section 20 of the Interstate Commerce Act applies only to accounts, including therein records, documents and memoranda.

6. Ellis *v.* Interstate Commerce Commission (237 U. S. Repts. 434, May 10, 1915).—In this decision concerning the investigation of the Armour Car Lines by the Interstate Commerce Commission, the Supreme Court held that a mere "fishing expedition into the affairs of a stranger in hopes that something disreputable might turn up is not permissible." On the other hand, questions which have a real bearing upon the points at issue must be answered by a witness when such points come within the jurisdiction of the Commission.

7. Pennsylvania R. R. Co. *v.* Puritan Coal Mining Co. (237 U. S. Repts. 121, April 5, 1915).—When in case of car shortage the shipper complains that the carriers' rule of distribution is unfair, the question is one which should properly be brought before the Interstate Commerce Commission in the first instance, but when he complains that the carrier refuses to furnish the cars he was entitled to under the distribution rule while other shippers were furnished more than they were entitled to under the rule, the preliminary finding of the Commission is unnecessary and the state and Federal courts have jurisdiction even if the shipments were interstate.

8. Chicago, Burlington & Quincy R. R. Co. *v.* Wisconsin Railroad Commission (237 U. S. Repts. 220, April 12, 1915).—"A State may require carriers to provide adequate local facilities even to stoppage of interstate trains or rearrangement of their schedules, but when local requirements have been met the obligation of the carrier is performed, and the stoppage of interstate trains becomes an improper and illegal interference with interstate commerce." The Wisconsin statute requiring interstate trains to stop at villages of a specified number of inhabitants without regard to the volume of business was held in this case to be a burden on interstate commerce and contrary to the provisions of the Federal Constitution.

FEDERAL LEGISLATION

The Cummins Amendment.—On March 4 Congress amended section 7 —the liability clause—of the Interstate Commerce Act by providing that in case of any loss, damage or injury to property caused by an initial common carrier or any connecting line engaged in interstate commerce the carrier issuing the receipt or bill of lading shall be liable "for the full actual loss, damage, or injury to such property" and that "no contract, receipt, rule, regulation, or other limitation of any character shall exempt" such carrier from full liability. This so-called Cummins Amendment differs from the previous amendment of June 29, 1906, the Carmack Amendment, chiefly in that it prohibits limited-liability clauses in bills of lading, live-stock contracts, special shipping contracts, rate tariffs, etc., which provide that in case of loss or damage not more than an agreed valuation can be collected from the responsible carriers causing the loss or damage. Carriers engaged in interstate commerce may now specify that their general charges shall be based upon agreed maximum valuations and that additional charges will be collected in case the actual value of the property shipped is greater than such agreed valuations, but they are in all cases liable for the full actual loss or damage caused by them.

The Cummins Amendment specifies further that the carriers may not

"provide by rule, contract, regulation, or otherwise a shorter period for giving notice of claims than 90 days and for the filing of claims for a shorter period than four months, and for the institution of suits than two years." It also provides that "if the loss, damage, or injury complained of was due to delay or damage while being loaded or unloaded, or damaged in transit by carelessness or negligence, then no notice of claim nor filing of claim shall be required as a condition precedent to recovery."

STATE LEGISLATION

Railroad and Public Utilities Commissions.—The most important commission laws of the 1915 sessions of the state legislatures were the act of Wyoming creating a public utilities commission with broad powers, and the act by which the California commission was given jurisdiction over all other public utilities, in addition to railroads. The following table indicates the types of commissions now existing in the various states:

STATE COMMISSIONS REGULATING RAILROADS

Advisory Powers	Mandatory Powers over Railroads	Public Utilities Commissions	Corporation Commissions	No Commission
None	Alabama	California	Arizona	Delaware
	Arkansas	Colorado	North Carolina	New Mexico
	Florida	Connecticut	Oklahoma	Utah
	Iowa	District of Columbia	Virginia	
	Kentucky	Georgia		
	Louisiana	Hawaii		
	Michigan	Idaho		
	Minnesota	Illinois		
	Mississippi	Indiana		
	Missouri	Kansas		
	Nebraska	Maine		
	Nevada	Maryland		
	North Dakota	Massachusetts		
	South Carolina	Montana		
	South Dakota	New Hampshire		
	Tennessee	New Jersey		
	Texas	New York		
		Ohio		
		Oregon		
		Pennsylvania		
		Rhode Island		
		Vermont		
		Washington		
		West Virginia		
		Wisconsin		
		Wyoming		

A comprehensive law creating a Public Service Commission was enacted in Wyoming (Wy., 1915, Ch. 146), but one which is unique in that the commission is composed of the governor, treasurer and auditor of the state. The attorney-general is to act as the legal adviser of the Commission. The Commission is given power to supervise and regulate every public utility doing business in the state and is given such implied and incidental powers as may be necessary to carry out the powers specifically conferred. Its jurisdiction extends over (1) the transportation of passengers or property by railroad, express, sleeping car, private car, and street railway companies; (2) the transmission of intelligence by electricity; (3) the generation, transmission and distribution of electricity for light, heat and power; (4) the manufacture, distribution and sale of natural or unmanufactured gas for light, heat or power; (5) the supplying, storage and distribution of water for manufacturing, municipal or domestic use; (6) the production and distribution of steam as a public utility; and (7) the transportation of oil or gas by pipe lines. The Commission may investigate service and rates, upon complaint or its own initiative, and may order inadequate, unjust or discriminating rates to be changed after holding a public hearing on the issue involved. Where exorbitant rates have been found to exist the Commission may order the ex-

cess over a reasonable rate to be refunded. All rates are to be uniform and no discrimination between persons is to exist, except that reductions in rates may be given to employees, for charitable purposes, etc. No new company may enter a public-utility field in which service is already being rendered without a certificate of public necessity from the Commission. It may require the filing of rate contracts and agreements between public-utility companies and may make provisions for public safety.

Additional powers given to the California Railroad Commission place it in the public-utilities class (Cal., 1915, Ch. 91). It is given jurisdiction over express, street railway, railroad, despatch, sleeping car, dining car, freight line, special car, pipe line, gas, electric, telephone, telegraph and water works companies, wharfingers, and warehousemen. The act also extends the jurisdiction of the Commission to carriers operating over water routes. It is given power to fix absolute charges, rules and rate divisions and to regulate the character of service. It may also prescribe standards for gas, electric and water service, establish a system of accounts and compel adequate and reasonable depreciation accounts. Consolidation of public utilities can be consummated only with the Commission's consent. In regulating security issues it may fix the purposes for which stocks and bonds shall be issued and its permission is a necessary part of such issuance.

The power of the North Dakota Railroad Commission was extended over telephones (N. D., 1915, Ch. 209). It was given power to fix reasonable rates, establish adequate service, prescribe standard accounting systems, and enforce necessary physical connections and joint rates. No new service is to be installed where an adequate one already exists or without the permission of the commission.

The legislatures of most of the states were in session during the year and enacted much legislation relating to public-service commissions, the most important acts of which are here enumerated. Laws requiring accidents to be reported to the utilities commission were passed in Maine (Ch. 347) and Oregon (Ch. 76). In Maine the permission of the commission was required in case of stock and bond issues, stock decreases and stock dividends, and in case of purchases and leases of telephone and telegraph companies (Ch. 347). The permission of the commission is also required in case of consolidations, leases and purchases of railroads in Washington (Ch. 136) and Maine (Ch. 347); of advances in rates in South Dakota (Ch. 261); change of location of offices, machine shops and roundhouses in Texas (Ch. 20); and foreign companies doing business in Vermont (Act 59). In West Virginia the commission may require public utilities to furnish their facilities for the use of other companies where the public good demands it (Ch. 133). No new services are to be established unless the commission deems them necessary in Maine (Ch. 336), Idaho (Ch. 62) and Washington (Ch. 178). Commissions were given power over automobiles for hire in Colorado (Ch. 133), water transportation in Idaho (Ch. 62), oil and gas pipe lines in Washington (Ch. 132), public terminal grain warehouses in Washington (Ch. 170), scales for weighing shipments in South Dakota (Ch. 649), and the improvement of roadbeds in Texas (Ch. 129). In Nevada the commission was given power to classify the services of public utilities, prescribe rules for the installation of instruments, require adherence to rates, and suspend new schedules (Chs. 109, 193, 279). The Kansas commission was given power to regulate the construction of sidings to grain elevators (Ch. 284); the New Jersey commission to fix joint rates and divisions on steam and trolley routes (Ch. 368); and the Maine commission to order electric companies to furnish power to other public utilities (Ch. 336). The Ohio utilities commission was given power to investigate rates on its own initiative, to test and examine products of utilities (pp. 188, 554), and to value their property (p. 225). In Maine the commission was empowered to hold hearings and decide on the removal of grade crossings on the appeal of municipal authorities (Ch. 325); and in North Dakota to in-

vestigate the rates of water, gas and electric companies, fix their maximum rates (Ch. 208), and oblige railroads to erect stockyard facilities (Ch. 204). In South Dakota the commission may require the construction of stockyard facilities (Ch. 263) and track scales (Ch. 266), and it was also given power to investigate rates upon complaint or its own initiative and to make reparation for overcharges (Ch. 262). The West Virginia commission was given additional power to amend unjust rates, and power to require physical connections and establish a system of accounts (p. 40). (See also XI, *Public Services.*)

Freight Rate Acts.—An act of the Michigan legislature (No. 277) revised the long-and-short haul clause and gave the commission power to relieve carriers from burdens imposed by its strict application. In cases of proposed increases in rates the utilities commission of Washington was given power to suspend the rates until a hearing is held, the burden of proving the necessity for the new rates being placed on the companies (Ch. 133).

Passenger Fare Acts.—The maximum fares heretofore prescribed in Arkansas were revised to range from two to five cents per mile according to the distance traveled (Act 90). A Maine statute required railroads issuing 1,000-mile mileage books also to issue books good for 500 miles of travel (Ch. 1). In Idaho it was provided (Ch. 95) that public officials must obtain certificates from the Public Utilities Commission in order to receive railroad passes. The Nebraska legislature (Ch. 106) stipulated the number of caretakers of live stock who are entitled to free transportation.

Safety and Public Health Statutes.—Trespassing was forbidden and penalties prescribed therefor in North Dakota (Ch. 206), Vermont (Act 144), West Virginia (Ch. 20), Rhode Island (1913-1914, Ch. 953), and California (Ch. 648). Laws regulating grade crossings and their protection and repair were enacted in North Carolina (Ch. 250), Kansas (Chs. 280, 281 & 288), Ohio (p. 611), and New York (Chs. 240, 559). A statute placing control of grade crossings in the hands of the Public Utility Commission was passed in Indiana (Ch. 49). Vermont required the gradual removal of grade crossings at the rate of one annually for each 80 miles of track (Act 148), and in New Jersey (Ch. 57) municipalities were authorized to enter into joint contracts with railroads for the abolition of grade crossings. Suitable and efficient headlights were prescribed in Nevada (Ch. 128), Missouri (p. 229), and New Mexico (Ch. 37); and water gauges were required on locomotives in California (Ch. 499).

A California act makes provision for derailing switches and the erection of signboards at such switches (Ch. 498), and another provides that engineers, conductors, and trainmen shall receive and send orders pertaining to train operation only at instruments approved by the Railroad Commission (Ch. 494). Punishment was prescribed for persons interfering with the operation of trains or safety devices in Oregon (Ch. 241) and Indiana (Ch. 99); Missouri required the maintenance of lights at main line and lead switches (p. 230); and Vermont limited the number of freight cars following passenger cars on a train (Act 146). A Texas statute (Ch. 20) authorized the commission to require railroads to place roadbeds in safe condition. North and South Dakota acts required railroads to fence in the right of way when it crosses private property (N. Dak., Ch. 202; S. Dak., Ch. 264); and in Oregon railroads were required to report all accidents to the state Industrial Accident Board, and the Railroad Commission was empowered to investigate such accidents (Ch. 76).

Two health statutes were enacted. Pennsylvania provided that sufferers from certain diseases should not be employed on dining cars or in restaurants (Act 281). In North Dakota the Railroad Commission was authorized to require railroads to clean live-stock cars before using them to transport live-stock into the state (Ch. 203).

Train Crew Laws.—The full-crew law of Nevada (Ch. 86) was amended so as not to apply to railroads less than 95 miles in length or running

not more than one train per day, and the details of the California full-crew law of 1911 were amended somewhat, but on the whole the tendency to enact laws of this kind which had been so pronounced in 1914 was checked. Efforts were made to have some of them repealed. In Pennsylvania a repealing act was passed but was vetoed by the governor.

Miscellaneous.—A statute of Arizona (Ch. 10) required railroad employers to keep a record of all stock killed or injured, and California required the payment of damages for injuries to stock (Ch. 648). In Arkansas railroads were required to repair rolling stock within the state if they have repair shops situated in Arkansas (Act 220). In New York railroads were made liable for failure to construct and maintain cattle guards (Ch. 281). Georgia provided that no railroad may parallel the line of the Western and Atlantic Railroad while it is the property of the state (p. 18). An act of Kansas (Ch. 229) required railroads to advance the charges for grain grading and inspection while in transit. A Kansas statute made necessary the acquiescence of 75 per cent. of the outstanding stock of a railroad company before preferred stock may be issued (Ch. 162). An act of New Mexico limited the interest on railroad bonds to 10 per cent., but enabled the directors of companies to issue bonds more easily, the existing need for construction funds being declared to be an emergency need (Ch. 20). The purposes for which bonds may be issued were prescribed by law in Idaho (Ch. 13). The Michigan legislature required locomotives to be equipped with spark arresters (Act 221); provided a Board of Mediation and Arbitration to settle the labor disputes of railroad and public-utility companies (Act 230); regulated the interchange of traffic, routing, and the construction of private sidings; and fixed the carrier's liability for loss or damage caused by a railroad or its connecting carrier (Act 278). An Ohio statute authorized the creation of boards of rapid transit commissioners in cities to control and manage street railways (p. 286). Pennsylvania empowered cities of the second class to construct, maintain and lease railway tracks and equipment (Act 21). North Dakota enacted a statute which holds railroads liable for injuries to employees, modifies the effectiveness of the defence of contributory negligence and abrogates the defence of assumption of risk (Ch. 207). Bills of ladings were regulated in Vermont and Idaho (Vt., Act 149; Idaho, Ch. 16); and a Vermont statute provides that no demurrage shall be charged until four days after notice has been given the consignee (Act 145). Purchases, sales and leases of railroads must be ratified by 75 per cent. of the stockholders according to a law enacted in Washington (Ch. 136). A South Carolina act (Act 308) authorizes railroads to reconstruct and relocate lines and to condemn property for this purpose; in Ohio, railroads were authorized to enter upon land for purposes of examination and survey (p. 347); and the Vermont commission was empowered to authorize the condemnation of property by public-service corporations (Act 163).

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XXI. ENGINEERING

CIVIL ENGINEERING

FRANK C. WIGHT

Engineers for Military Service.—During 1915 the military preparedness of the engineering profession has been the subject of careful consideration. Modern warfare, more than ever, requires engineering talent of the highest order, not only in the preparation of the field of battle and the conduct of the battle itself but also in the innumerable operations preceding the action. Realizing that in time of war the engineer corps of an army must be large and well trained, members of the engineering profession, both individually and in their societies, have been studying how they can best organize so that the body of trained civilian engineers can absorb enough of the military side of engineering, an allied but in many ways a different profession, to be of immediate service in case of war. It is obvious that these civilian engineers are the men who will have to take up the bulk of the military engineering service in any required volunteer army.

To this end a committee of the American Society of Civil Engineers has put its services at the command of the Government for aid in working out the defense plans which are likely to mature during the coming winter. Meanwhile training in military engineering is being taken up by the engineering students in the state-aid colleges where military instruction, hitherto only in infantry tactics, is required, and many suggestions for the development of a military engineering reserve are being studied by the officers of the Army and by interested civilian engineers.

Bridges.—The year 1915 was marked by the great number of large steel bridges under construction. In no other field of engineering is there such pronounced activity. Over the St. Lawrence near Quebec the longest cantilever span (1,800 ft.) is well under way (*A. Y. B.*, 1913, p. 575); the steelwork is now being erected but closure of the two cantilever arms is not expected before the working season of 1916. Over Hell Gate in the East River at New York the longest steel arch (977½ ft.; *A. Y. B.*, 1913, p. 575) was joined at its crown on Sept. 30. At Sciotoville, O., the longest continuous-span truss is just being started across the Ohio River, and at Metropolis, Ill., the longest simple-span truss is beginning. Thus at one time on the North American continent four record-breaking steel trusses of different types are being built. The only steel-bridge type in which the existing record span is not being surpassed is the suspension bridge. The Williamsburg Bridge across the East River at New York with its span of 1,600 ft. still holds the record.

The Sciotoville bridge of the Chesapeake & Ohio Northern Railway over the Ohio River at Sciotoville is in many ways a striking departure from conventional practice in bridge design. Channel conditions made it desirable to have two large openings, fixed by the U. S. War Department at 750 ft. each, which called for two spans of about 775 ft. between centers of piers. After an examination of the available types of bridge, Gustav Lindenthal, the designing engineer, who also has in charge the Hell Gate arch in New York City, adopted the continuous type of structure, the first large bridge of this type in America. In this type of truss the steel frame is continuous over a middle pier. The principal dimensions of the river spans are: total length, center to cen-

ter, end pier, 1,550 ft.; clear height above low water, 106½ ft.; height of trusses at center pier, 129 ft.; width between center of trusses, 39 ft. A carbon steel of somewhat greater ultimate strength than ordinary commercial bridge steel is to be used in the structure.

The Chicago, Burlington & Quincy Railroad bridge over the Ohio River at Metropolis, Ill., has three special features: the longest fixed-truss span yet built, 722 ft. 11 in., center to center of piers; the use of silicon steel for the truss members; and a provision for very heavy loading. The bridge has a total length of 3,252 ft., and besides the large span noted has four others of about 560 ft. and a viaduct approach. The use of silicon steel is novel. With its higher strength the reduction in section of members made possible a marked economy. The load for which the bridge has been designed is very much greater than any other bridge approaching its size.

The foundation work on the new Memphis bridge across the Mississippi (*A. Y. B.*, 1913, p. 575) was completed early in 1915 and the superstructure is now being erected. The Burrard Inlet bridge at Vancouver, B. C., one of the big bridges of Canada, was relet to an American in 1915 after a British engineer's design had been accepted and then rejected on account of the high estimated cost; the construction is contingent upon the raising of funds from the city and provincial government. At Portland, Ore., another very large bridge is being built across the Columbia River valley; the crossing, about 3¼ miles, entirely under water at the high stage of the river, is to be made by 5,000 ft. of steel bridge structure and 12,000 ft. of embankment. In India, across the sacred Ganges, there was completed in 1915 one of the large steel bridges of the world. It is at Sara Ghat, about 120 miles above Calcutta, and is over one mile long, made up of 15 trusses each of 345-ft. span. It is named the Hardinge Bridge in honor of the Viceroy of India and possesses some literary interest because of its remarkable resemblance in type, size and location to the Kashi Bridge of Kipling's "The Bridge-Builders."

In concrete bridges the year has not been so notable although a great number of bridges of this type are under construction, for the most part in municipal viaducts where appearance is of prime importance. In railway bridges, however, the concrete bridge is coming into its own, as witness the numerous bridges of that material on the new Scranton cut-off of the Lackawanna Railroad (see *A. Y. B.*, 1912, p. 555, for description of Tunkhannock Viaduct on this line, the largest concrete bridge) and the 45-span bridge of the Cumberland Valley Railroad across the Susquehanna at Harrisburg, Pa.

Buildings.—Nothing of any great importance developed in the building trade during the year. No record buildings were erected, partly on account of the general depression in business and partly because the excessively large building has not proved over successful even in those large centers where the high price of land warrants such construction. The largest of such buildings, the Equitable Building on Broadway in New York City, was opened for service in 1915, but nothing even approximating it has been planned, although rumors of a 900-ft. building of many stories regularly fill the metropolitan press. In concrete buildings three notable structures should be put on record, the Traymore Hotel in Atlantic City, N. J., the latest Gair building in Brooklyn, and the new building for the Massachusetts Institute of Technology on the banks of the Charles River at Cambridge, Mass. The Traymore Hotel is a monster structure, containing 700 rooms and baths beside the service rooms, 18 stories high, and surmounted by two domes that rise to 230 ft. above the adjacent ocean; it is of the greatest architectural and structural complexity and in full story height is the largest concrete building yet built. The Gair building is of the ordinary reinforced concrete warehouse type but is surmounted by a small tower which rises to a total height of 275 ft., which is the highest elevation to which a concrete building has been

carried. The new Technology building, also of reinforced concrete but faced with limestone, will house the entire activities of a large college under one roof. It is made up of a great number of separate buildings each devoted to some particular subject, but all joined together in one symmetrical whole. It is now under construction and the first units should be ready for the college year 1916-17.

Fortunately no disastrous or extensive conflagration occurred in 1915. While this, of course, does not indicate permanent progress, it is a fact that the fire-protection campaign waged by insurance and building interests and by local fire departments is beginning to take effect and the recognition of the needlessness of most fires is becoming more general. In time it is to be hoped that a large and active fire department may come to be more a source of civic shame than of pride.

The fire in the Edison factories at West Orange on Dec. 9, 1914 (*A. Y. B.*, 1914, p. 548) did much to show factory owners the need of complete protection and probably led to the correction of more building evils than all of the preaching and propaganda of a decade. Incidentally, the Edison buildings were all quickly and efficiently repaired by a most ingenious adaptation of the reinforced concrete of which they were built and are now once more in full service. It is probable that not more than 15 per cent. of the structure was damaged by the severe conflagration that totally destroyed its contents.

Railways.—In railway development by far the most important work of the year was the actual beginning of the government railways in Alaska. On April 10 President Wilson announced that the Seward-Fairbanks line, known as the Susitna route, had been selected as the line to be built under the $35,000,000 appropriation of 1914 (*A. Y. B.*, 1914, 1, 239, 549). This route extends from Seward, on Resurrection Bay, to Fairbanks, on the Tanana River, a distance of 471 miles. It includes the existing Alaska Northern Railroad, a 71-mile line which is to be bought from private owners for $1,150,000. The road will be a standard-gauge line, and will have a base on Cook's Inlet from which the Matanuska coal can be shipped during the greater part of the year. The road has been under survey since 1914 and the engineering commission has been continuing surveys for future routes as well as conducting the construction operations under day labor, without the interposition of large contractors.

The other great governmental enterprise, the valuation of railways, progresses without much publicity or noise, but is engaging the attention of many engineers. So far no complete valuation of any railroad has been made. (See also XX, *Railroads.*)

Railway construction is at a low ebb. Some line revision is being made, but only in the richer roads, and construction activity is confined mostly to needed maintenance and replacement. The government figures for 1914, the latest available, are as follows: the mileage of railways on June 30, 1914, was 247,400 miles of line and 377,102 miles of track. The increase of trackage during the year was 7,522 miles.

Large railway-terminal projects such as marked each of the preceding ten years are not so much in evidence, though at St. Paul, Buffalo, Cleveland and Chicago such work is in progress. In Chicago the old station at Adams and Canal streets is being replaced by a new Union Station and a companion freight terminal. This station is to be used mainly by the Pennsylvania Railroad, but also by the Chicago, Burlington & Quincy, Chicago, Milwaukee & St. Paul, and Chicago & Alton railways. The estimated cost of the work is $60,000,000. Nothing definite has developed in the great unification of railway terminals so actively agitated for many years in Chicago. In St. Paul the old Union Station is to be replaced by a new one to be used by all the railways entering the city. The original plans involved a realignment of the river bank, the scheme for which required the approval of the Chief of Engineers, U. S. Army. These plans have been withdrawn (Dec. 2) and an entirely new scheme,

not requiring Federal approval, will be submitted. The total cost of the new terminal is to be about $15,000,000.

Rivers and Canals.—The regular Federal Government appropriation for river improvement promises to develop an unusually acrimonious debate in the first session of the Sixty-fourth Congress, with a fair prospect of a pronounced curtailment in Federal activity along this line. The Administration is committed to a vigorous campaign for increased military expenditures in 1916 and subsequent years and no field offers a better opportunity for the required curtailment to meet this added expense than the so-called "pork-barrel" River and Harbor bill. In addition to this the army engineers, who have all river and harbor work in charge, are becoming more and more outspoken in their opposition to obviously useless development of rivers hopelessly dead in a commercial way, and the bolder spirits in Congress are heartened by this professional aid. Unfortunately it is currently believed that all opposition to river improvement is the result of a too insistent railway influence, so that engineering opinion, both civilian and military, is too often disregarded when river or canal projects are under consideration.

In canal projects during the year, the Illinois legislature passed a bill authorizing the construction of a waterway of eight-feet draft to connect the Chicago Drainage Canal at Joliet with the Illinois River at LaSalle, a distance of 65 miles. An expenditure of $5,000,000 was authorized. The Pennsylvania state commission appointed to investigate a proposed canal from the Ohio River near Pittsburgh to Lake Erie has been conducting surveys and has reported favorably on this project, but no authorization for its construction has been made. The Dalles-Celilo Canal, providing seven-foot navigation around the falls of the Columbia River between The Dalles and Celilo, was opened for traffic on May 5. This makes continuous nagivation possible from the lower Columbia to the upper Columbia and Snake rivers in the states of Washington, Oregon and Idaho.

The Welland Canal around Niagara Falls in Canada (*A. Y. B.*, 1912, p. 558) and the New York State Barge Canal are both progressing favorably, although neither is near completion. A referendum for a further bond issue of $27,000,000 was passed by the voters of New York State in November, bringing the total expenditures authorized to date for the Barge Canal up to $154,800,000, apportioned as follows:

Original bond issue.....	$101,000,000
Cayuga-Seneca Canal issue.	7,000,000
Terminals issue.....	19,800,000
Extra issue (1915).....	27,000,000
	$154,800,000

The original estimate for the canal was $101,000,000. (See also X, *Waterways and Harbors.*)

Harbors.—The development of the harbors of the United States and Canada continues to be one of the leading engineering activities, particularly in the construction of modern piers which combine ample berthing facilities with freight-handling and storage facilities. Many such piers have been built or projected in 1915, not only in the larger ports but also in the minor seaboard and lake cities. Perhaps in no other branch of civil engineering is there so much opportunity for original design. On the lakes both Chicago and Cleveland opened municipal wharves, and in the seaboard cities, New London, Conn., Jacksonville, Fla., Beaumont, Tex., and New Orleans, all have large new developments under way. In each of these cities especial care is being taken to provide railroad access to the piers so that transshipment of ocean freight may be reduced to the lowest terms.

On the Atlantic coast three cities, Halifax, New York and Philadelphia, are committed to very large developments, and one other, Boston, has displayed good intentions of the same kind. The Government of Canada, through the Department of Railways and Canals, has now under way at Halifax the largest harbor work on the continent, a work which involves a complete rearrangement of the rail-

way and shipping system of the best natural harbor in the Dominion. This project comprises a new series of deepwater shipping piers and a landing quay in 50 ft. of water, a complete system of warehouses and storage sheds on the piers, a railway terminal for freight and passengers in physical connection with the piers, and a railway entrance to the city along an entirely new route. Contracts already let total nearly seven million dollars, and the total estimate of cost is about 30 millions. The new terminals are located near the extreme southern point of the peninsula on which the city is built and combine the advantages of a deep berth and a large protected turning basin within a short distance of the open sea. It is the claim of the designers that trans-Atlantic shipments and passengers can be set down in the Northwest a day earlier through Halifax than through any other Atlantic port. Furthermore, in distinction from all other Canadian Atlantic harbors, Halifax harbor is ice free all the year.

In New York a commission of engineers has been appointed by the city to make an investigation of the needs of the harbor and to design a comprehensive port-development plan which can be followed with an impartial eye to the needs of shipping and to the present overwhelming deficiencies in freight transfer. In Philadelphia, two new shipping piers in the old harbor district were completed during the year and a start was made toward the construction of a new shipping district near the southerly border of the city, which district will include not only piers of great length and of the latest equipment but will also tie up to a new railway freight yard also under construction on the shore back of the piers. In Boston the harbor commissioners have outlined an ambitious scheme of development but political differences have effectually prevented any decisive action thereon. Even the dry dock (*A. Y. B.*, 1914, p. 551) which seemed to be well under way has been held up on one pretext after another and is still a long way from completion. (See also X, *Waterways and Harbors.*)

Storms and Floods.—The year 1915 has been memorable for heavy rain and wind storms at different times and over different areas. It was a year of excessive rainfall. Many observation stations recorded concentrated and total rainfall far in excess of all previous records, a matter of great importance to the sewer and drainage engineer for it is from such records that he deduces the required capacity of his sewers and conduits. Fortunately the rains were never sufficiently widespread to cause large floods, which can only result from distribution of heavy rainfall over large drainage areas, but numerous minor floods caused much damage and loss of life. The two worst floods were those at Erie, Pa., and St. Louis. At Erie on Aug. 3 a small stream through the center of the city had its banks overtopped by a record-breaking rain over its very small drainage area, with consequent heavy damage in the business and residence districts. In St. Louis almost the same conditions occurring on Aug. 19-20 caused floods in the River des Pères within the city limits proper and in the Meramec River in its suburban area; here also the damage was quite extensive.

Two West Indian hurricanes of precisely the same meteorological nature swept the Gulf states in the fall of 1915, one on Aug. 16-17 centering on Galveston, Tex., and one on Sept. 29 centering on New Orleans. These storms originated in the lower West Indies, swept across the Gulf with maximum force at about the north shore thereof and afterward turned northeast and passed out through the St. Lawrence valley. That at Galveston might readily have repeated the horrors of the 1900 hurricane, when 8,000 lives were lost and the city practically destroyed, had it not been for the famous Galveston seawall built along the Gulf shores of the island in 1910, and for the filling which elevated the grade of the southerly part of the city to the level of the top of that wall. In consequence the driven waters of the Gulf wore themselves down on the wall and the sole damage by water was the uprooting of the boulevard paving paralleling

the seawall and such minor damage as was caused by dead water backing up into the part of the city remaining at the low grade. The terrific wind wrecked many of the more flimsy structures of the city, and the earthfill portion of the new Causeway connecting the island with the mainland was practically destroyed, the concrete-arch section remaining safe and solid.

In New Orleans also the damage was confined to wind damage and some flooding due to the inability of the drainage pumps to care for the excessive rainfall. In both storms low barometric records were made, 28.20 at Galveston and 28.11 at New Orleans.

Earlier in the year, on July 7, a wind storm of extreme intensity (62 miles per hour) wrecked a number of fairly stable houses in Cincinnati. None of these storms was cyclonic in behavior.

Subways and Elevated Railways.—While a number of the larger cities are talking rapid transit by means of trains or cars running in subways or on elevated lines only three cities are making any progress. In New York the new subway and elevated system (*A. Y. B.*, 1913, p. 557) is progressing rapidly. Of the new lines only the Sea Beach connection to Coney Island has been opened for traffic, but construction is going on all over the city and the actual digging of many isolated sections has been completed. In the public mind the outstanding feature of the work was the collapse of the street covering of the construction work on Seventh Avenue between Twenty-fourth and Twenty-fifth streets on Sept. 22 and on Broadway at Thirty-eighth Street on Sept. 25. At both of these locations the digging was being carried on in open cut with a temporary wooden cover which was carried from below on timbering and on which the many activities of the city proceeded as usual. In both cases, too, this covering collapsed without warning, precipitating into the cut all of the traffic and causing the death of seven persons at Seventh Avenue and one at Broadway, beside injuring some others. No adjacent buildings were harmed. Investigations showed that the Seventh Avenue collapse was initiated by a blast in the cut which in some unknown manner threw down one line of timbering which in falling started a train of collapses along the timbering of one block. This cut was in solid rock, the sides of which apparently did not move. The Broadway collapse, on the other hand, was due to a rock slide from the side of the excavation. The failures were only a part of the risk with which such huge engineering operations are carried on, but unfortunately the general public had not been warned of such risk by the authorities but had rather been led to believe that the element of risk had been largely eliminated. It seems, too, that the last precaution for permanent safety had not been taken in the design of the timbering.

In Boston the new subways are also progressing favorably, although none has been opened for its entire length. In Philadelphia the voters approved in April an initial loan of $6,000,000, which was apportioned equally between proposed subway and elevated extensions. Work on these extensions was started in August. The subway contract covers the City Hall station section of the Broad Street line, extending from Filbert Street to South End Square, about 750 ft. long, passing under the present subway line in Filbert Street and passing also under the large Philadelphia City Hall. The elevated contract covers the column foundation piers of about five miles of new line. Additional sections of subway and elevated are to be advertised early in 1916. The plans of the Department of City Transit contemplate the immediate construction of about 11 miles of subway north and south in Broad Street, with elevated spurs at the east, the west, and the north, together with a double-track elevated railway seven miles long to the Frankfort district of the city nearly paralleling the Delaware River and probably making a connection with the present Market Street subway for operation to the central business district. The estimated cost of the subway and elevated structures is $34,000,000. Other lines

in addition to those immediately contemplated are in prospect for Philadelphia.

Amusement Enterprises.—Although the year has been a poor one from the engineering standpoint, there has been an unusually large amount of work in a rather new field, the construction of amusement or sporting enterprises. These may be divided into three classes, baseball parks, stadiums and motor speedways. The ball park we have always had with us, but within the past few years the type of structure required has developed beyond the capability of the ordinary builder and has become a real engineering problem. In Boston, for instance, the National League Club completed during 1915 a park with concrete and steel stands capable of holding nearly 50,000 people, and the construction of the stands and of the field involved design and execution of the highest order. In stadiums, the prevailing type is of reinforced concrete modeled in appearance after those of Greece. Many of the larger universities have built such structures in the past few years, those at the College of the City of New York, Cornell University and the University of Michigan being completed in 1915. The city of San Diego, Cal., also opened on May 30 a municipal stadium holding about 28,000 people. The motor speedway is a more recent arrival, although that at Indianapolis is of some years' standing. Many such enterprises have been started in the past year, including those at Sheepshead Bay, New York, St. Paul, Chicago and Providence. These structures comprise a smooth banked closed track of from one to two miles, with surfaces variously of brick, concrete, plank on edge or asphalt, and with surrounding stands holding up to 100,000 people. On the tracks are held motor races where speeds of 120 miles per hour are attained. The design of the curves, banks and surfaces to carry safely such fast-moving vehicles is a very special problem, to say nothing of the engineering skill required in the design of the stands.

Water Supply.—Of the large water-supply projects in this country the two largest of recent date, those at Los Angeles and New York, are practically complete, although the final connection of some of the more important parts of the latter have not been made. The San Francisco Hetch Hetchy supply (*A. Y. B.*, 1913, p. 581) was started in 1915, but the progress made is only nominal. At Providence, R. I., a new supply is being planned. The other large water-supply scheme on this continent is at Winnipeg, Man. Here there is under construction a 97.2-mile aqueduct to supply 102,000,000 gals. per day which is estimated to cost $13,000,000. The work includes 104.2 miles of construction railway, 35 miles of cut-and-cover aqueduct, and 9.8 miles of 60-in. steel pipe. Advantage is taken of a fall of 294 ft. between Shoal Lake, the source of the supply, and Winnipeg to bring in the supply by gravity. In Ottawa, also, a large new water system is under construction. This plan proposes to use the Ottawa River water unfiltered and to pump it across from an intake near an island in a pipe line either on a bridge or in conduit. (See also XI, *Public Services.*)

In water purification the rapid sand filter is most prominent. Plants of this type are nearly complete at St. Louis (160,000,000 gals.), Cleveland (225,000,000 gals.) and Baltimore (128,000,000 gals.). Water disinfection either by the use of calcium hypochlorite or liquid chlorine, continues to increase in popularity. The latter method appears the more promising of the two, for although it requires a more skilled attendance, it saves in total labor and in cost, while at the same time it is more free from objectionable odor and taste. (See also XXIV, *Sanitary Chemistry.*)

Sewers.—No remarkable sewerage project marked the year, though an engineering commission, employed by the Chicago Real Estate Board, made an extended report recommending a radical revision of sewerage and sewage-disposal system of that city. In the matter of sewage disposal the most important development of the year was the great prominence given to a new and important system known as the "activated sludge" process. This process is a new variety

of forced aeration of sewage in the presence of a considerable volume, tentatively 25 per cent., of accumulated sludge which has itself been aerated and is "enlivened" with oxygen and bacteria. The oxygen is supplied by forced aeration by a blower or an air compressor. In the cruder experiments with tanks the air is distributed by means of a perforated pipe giving uneven distribution, with pronounced boiling at the surface and doubtless much waste of air. For satisfactory distribution some form of porous plate extending over a considerable area of the tank bottom seems essential. The strongest arguments for the process are that with a relatively small tank area it will produce a stable, well clarified effluent with a considerable degree of nitrifaction and a quick-drying, unobjectionable sludge of high fertilizing value, and that if the aeration process be continued for a not prohibitive length of time, the effluent will show a 99 per cent. bacterial reduction. Experiments are now under way in Washington, Baltimore, Chicago and Regina, Sask., on a small scale, at Urbana, Ill., on a fairly large scale, and at Milwaukee, Brooklyn, Brockton, Cleveland and Lawrence, Kans., on a quite large scale. It is not settled yet what the process will cost, or what should be the size and shape of tank, depth of sewage, method of air distribution, whether the tank should be operated on the fill and draw or continuous flow plan, etc. (M. N. Baker, in *Engineering News.*)

Dry Docks.—No new large dry docks were completed or projected during the year, but a definite scheme was adopted by the Navy Department for the construction of the Pearl Harbor Dry Dock, near Honolulu, which failed while under construction in February, 1913 (*A. Y. B.*, 1913, p. 580). The new method, which is a radical innovation, involves the construction of a heavily reinforced-concrete box on a temporary floating dry dock and the sinking of a superimposed coffer-dam fastened to this box, which forms one section of the bottom of the dock. The radical part of the plan is the use of 15 floating concrete boxes or caissons 60 ft. long and 152 ft. wide, which, when joined together with the connection joints and a fixed end section, form the 1,092-ft. dock.

Dams.—The Arrowrock Dam on the U. S. Reclamation Service project near Boise, Idaho, was dedicated on Oct. 4. This is the highest dam in the world, being 350 ft. from foundation to crest (*A. Y. B.*, 1912, p. 558). The rebuilding of the dam across the Colorado River at Austin, Tex., was also completed during the year. This is the masonry dam which failed in 1900 under the overtopping of a flood in the river. A piece 500 ft. long at that time slid almost intact far downstream. Many proposals to rebuild it have been made since then, but the present project is the only one which was attempted. It consists in grouting with liquid cement the fissures in the foundation and filling the gap in the dam with a hollow reinforced-concrete section. At the same time the entire dam was raised to get more head.

Tunnels.—In railway tunnels the most important now under way is that through Rogers Pass on the Canadian Pacific Railway at the summit of the Rocky Mountains. It is the largest tunnel in North America, being 26,400 ft. between portals, 29 ft. wide and 21½ ft. high. It is being driven by a method new to this country. Intermediate headings are made practicable by driving from each end a pioneer tunnel parallel with but distant from the main tunnel and running cross-cuts from the drift to the line of main tunnel. By application of high class organization and methods, remarkably fast progress is being made and the tunnel should be opened for traffic by the end of 1916.

In highway tunnels, the Stockton Street tunnel in San Francisco (*A. Y. B.*, 1912, p. 557) was completed during the year and the Twin Peaks tunnel in the same city is well under way. In Pittsburgh work has just been started on a twin-bore tunnel for a length of 5,800 ft. from East Carson Street to Warrington Avenue. Water tunnels reaching out to intake shafts in the lake are under construction at Chicago, Cleveland and Milwaukee.

ELECTRICAL ENGINEERING

HAROLD PENDER and C. D. FAWCETT

General Survey.—The year 1915 is marked in the electrical world not so much by phenomenal achievements as by an ever increasing tendency toward improved service and greater economy in the production and delivery of electrical energy. The installation of new equipment and the replacement of obsolete or inadequate machinery by new apparatus has not been on so great a scale as in the years immediately preceding. On the other hand, the improved operating features of recently installed apparatus have greatly advanced the use of electricity in residential and commercial districts. Another field developed in large part during the year is the application of electrical energy in sparsely settled sections. The interconnecting railways, telephone and telegraph lines, and transmission networks for supplying power and light have all been materially increased to supply the growing demand.

Industrially and commercially electrical growth has been hampered by the European War and by the indirect influences arising therefrom. A study of the exports of electrical supplies during 1915 as compared with the last few years shows a falling off in trade with the European powers and with South-American countries. In many cases the exportation of a given class of articles has increased but the average is below normal. Wire, cable and railway supplies have been exported in larger quantities than usual, but power machinery and industrial appliances show a marked decrease. A comparison of the months from August to May for the last three years illustrates this depression in export trade:

	Exports
August, 1912, to May, 1913,	$21,899,197
August, 1913, to May, 1914,	21,569,687
August, 1914, to May, 1915,	15,922,467

The transmission of intelligence by telephone and telegraph has been extended to greater distances by late inventions and new applications of the principles used in the sending, transmitting and receiving devices. The range of commercial wire telephony has been extended to a distance of 3,000 miles and telephonic communication by wireless up to a distance of 5,000 miles has been demonstrated as practicable. Invention along other lines has not been so marked, except in the case of new types of incandescent lamps and fixtures. Investigation and research work on the materials of construction used in all types of electrical apparatus has been entered into with greater ardor than in any preceding year. These investigations have been chiefly along the line of producing longer life, greater safety and higher efficiency. Of special importance are the improvements made in the manufacture of insulating materials.

The Far-West and Middle-West sections of the country have shown during the past 18 months a larger rate of increase of power consumption than has the eastern United States. This is due largely to the use of electrical devices in the irrigation and cultivation of hitherto unproductive soil, the growth of cities near these districts, and the increasing demand for high-speed electric traction between adjacent communities. Power consumption east of the Mississippi River shows an estimated decrease of about ten per cent. over 1914. A still greater decrease would no doubt appear if it had not been for the increased demand of textile, steel and munitions factories, caused by foreign trade.

Along the line of the increased use of electricity, it is interesting to note that in the past two years there has been an increase of about 100 per cent. in the sale of electrical household devices. The increase in the use of such devices will in time undoubtedly cause an appreciable reduction in the average rate charged per kilowatt-hour, since the increased residential load makes for efficiency in power generation.

Through the work of public-service commissions the rates charged for electrical energy are approaching the point where the consumer and producer are mutually satisfied (see also

XI, *Public Services*). In coöperation with the public-service commissions, the American Institute of Electrical Engineers, the American Electric Railway Association, the National Electric Light Association and the National Safety Council have been active in aiding the solution of those public-welfare problems which are affected by the allied electrical industries.

Telephony and Telegraphy.—Long-distance transmission from coast to coast by metallic circuits has been successfully accomplished during past year. By the use of well known and commercially practicable apparatus, the human voice may now be clearly transmitted over the span of 3,400 miles between New York and San Francisco. This transcontinental line is now in regular commercial use, and already the traffic over it has reached sufficient proportions to justify the expense involved. This extension of the range of telephonic communication has been effected by the use of the loading coil, telephone repeaters, transposition of both metallic and "phantom" circuits, and the substitution of copper for the usual iron wire conductors.

In regard to the interference felt on telephone circuits which are in close proximity to power lines, important investigations have been made. Due to higher harmonics in the electromotive forces produced by the alternators exciting the power lines, the currents in them contain high-frequency harmonics superimposed upon the fundamental sine wave of the 25- and 60-cycle energy. These higher frequencies, varying from 200 to 2,000 cycles per second, while not appreciably detrimental to the operation of the power lines, induce currents of like frequency in nearby telephone circuits, and these induced currents produce audible noises in the telephone which seriously interfere with the voice transmission. While it is mechanically possible so to construct alternators as to eliminate these harmonic frequencies, the great cost of such construction is prohibitive. By the transposition of circuits and by a proper separation of adjacent parallel lines, these interferences may be almost entirely eliminated. A Joint Committee on Inductive Interference in September, 1914, proposed rules governing the allowable distance between parallel power and telephone lines. Where these rules have been followed in recent installation on the Pacific Coast lines, marked improvement in telephonic communication has been noted.

The telephone seems to be rapidly replacing the telegraph for despatching purposes on local and short-line railway systems. This is specially noticeable on newly installed systems. The New York Central has materially increased its service on short-line branches by the more frequent adjustment of schedules afforded by telephone despatching.

Multiplex telegraphy has been improved in both the sending and receiving devices. By means of a perforated tape the messages are received and recorded on pages in Roman letters. The sending and receiving perforator has a keyboard similar to that of a typewriter. The letters are punched in the tape according to the Morse code, and then sent out over the wires from an automatic transmitter. The receiver performs the reverse operation from punched tape to the written page. This multiplex system is used between New York and Boston, a distance of 225 miles, and with such success that two 45-word messages may be transmitted per minute over one wire and an equal number may be sent in the opposite direction over the same wire at the same time.

Wireless telegraphy in the United States has been considerably affected by government censorship on all stations licensed to transmit over-sea messages, due to the desire of officials to avoid suspicion of acts which might be construed as not in accord with strict neutrality (*A. Y. B.*, 1914, p. 41). In spite of this hindrance to commercial use of the wireless, research work has been but slightly affected. Improvements in the audion, invented by Lee De Forest, have resulted in the production of sustained waves of much greater purity of tone and of much greater

energy. This has made possible a closer tuning of the sending and receiving stations, with the result that the effects of static disturbances in the atmosphere may be almost entirely eliminated. The importance of the increase in energy output may be appreciated when it is remembered that the energy transmitted to the receiving station is usually of the order of 10^{-7} of that radiated from the sending station.

In September, 1915, the human voice was carried by wireless transmission from Arlington, Va., near Washington, to Honolulu, a distance of 4,900 miles. Two weeks later words spoken at Arlington were received by the station on the Eiffel Tower in Paris. Since the first successful transmission, messages have been sent from Arlington to Mare Island, San Diego, Darien and Paris. The antenna which first received the ether waves at Honolulu was made of five wires stretched between a smokestack 100 ft. high and a water tank 80 ft. high. The transmitters and receivers were of the usual type. The field of application of wireless telephony will probably be limited to communication between ship and ship and between ship and shore, with possibly a limited transoceanic service.

Central Stations.—A review of the central-station industry brings forth a comparison between the capacity of the generating and transforming units and the capacities of corresponding units only three years ago. At that time the largest single generating unit had a capacity below 20,000 kw. To-day single generating units of 30,000 and 35,000 kw. capacity are in use. Single-phase transformers are now built in sizes up to 8,333 kw. There has recently been an installation of core-type transformers, each of which is rated at 7,500 kw., an increase of 5,000 kw. in capacity over former core-type designs. Among the central stations using these high-capacity units are the Philadelphia Electric Co., the Interborough Rapid Transit Co., the Edison Co. and the United Electric Co. of New York, and the Commonwealth Edison Co. of Chicago. All these high-capacity units are direct connected to steam turbines operating under high steam pressures and superheat, and discharging into condensers under a vacuum of only 0.6 to 1.0 in. of mercury above the theoretically perfect vacuum.

Single water-wheel driven generators have up to the present time not exceeded 18,000 kw. capacity. The suspension thrust-bearing designed for vertical shaft water-wheel generators has eliminated a great deal of trouble due to excessive weights on the bearing surfaces. Aggregate weights of 180 tons, including the weight of the wheel, rotor of the generator and the water-thrust, are sustained by this bearing. A marked tendency in hydro-electric generation is towards the adoption of low and medium capacity generator units for the utilization of water powers operating under low heads. These units range from 600 to 2,000 kilovolt-amperes capacity and operate at from 48.5 to 68.5 revolutions per minute. A number of direct-current water-wheel generators each having a rated output of 5,200 kw., 520 volts at 170 revolutions per minute, have recently been installed. These units exceed in size any generators of this type previously constructed.

The Aluminium Company of America, at Messina, N. Y., have installed a large number of synchronous converters rated at 500-volts, 60-cycles, with an output of 2,500 kw. each. To date these are the largest units installed for the conversion of alternating to direct current. This installation brings to mind the increasing adaptability of electrolytic processes to the refining of metals. It should be remembered that this same company uses direct-current energy to an approximate capacity of 90,000 kw. for aluminium deposition at their Niagara Falls plant. In this connection, also, from the standpoint of high economy in generation, transmission and consumption, it is interesting to note that this entire load is applied less than 3,000 ft. from the generator terminals and has a load-factor of over 90 per cent.

Protective apparatus for limiting and controlling excessive potentials, currents and frequencies has not been

materially changed in design during the year. The electrolytic lightning arrester quite successfully performs its function as an absorber of high-potential high-frequency surges. The charging resistance used in connection with this arrester has now been recognized as a practical necessity for charging operations. This resistance limits the capacity current from the line to the arrester and thereby decreases the surges formerly noticed at the instant of charging. The use of power-limiting reactances in the generator and feeder leads and between adjacent buses (bus-tie reactances) has increased in proportion to the increase in the load and to the increase in the connected generator capacities behind a possible short-circuit. The largest reactances connected directly in the generator leads are those recently installed in the Christian Street station of the Philadelphia Electric Co. These are rated as four per cent. reactances and are used in conjunction with the eight per cent. internal reactance of the new 30,000-kw. unit of this station. Protective devices for high-frequency surges are still under investigation. The arcing-ground suppressor is being successfully used for the suppression of insulator flash-overs. When an arc flashes from conductor to grounded tower around the insulator, the abnormal current surge energizes a series relay which in turn mechanically shunts a low-resistance fuse between the fault and the generator. This fuse immediately lowers the potential sufficiently to extinguish the arc, and, being calibrated to break in a fraction of a second, the normal potential is again applied without interruption to synchronous apparatus connected to the line. Due to the use of the protective devices referred to, the number of interruptions throughout the whole country has been materially decreased in the last year.

Improvements in transmission-line equipment have been rather lacking in scope, except in minor details in the design of towers, tower supports and anchors. Investigations by the large manufacturing companies of the properties of porcelain insulators as regards homogeneity, finish and resistance of the clay to changes in temperature and moisture will probably show important results in another year's time. The outdoor substation as developed in the past three years is still a mooted question among electrical engineers. Its place is no doubt a fixture in power distribution, but its sphere of usefulness is not yet determined. The low cost of installation and operation must be balanced against the greater reliability of apparatus installed within a substantial building. In outlying districts supplied by medium-voltage lines, say of potentials ranging from 13,200 to 33,000 volts, where possible interruptions would not seriously disturb the system, the outdoor substation finds its greatest application. On the other hand, many large outdoor substations on the large systems of the Pacific Coast have been amply justified, both in economy and continuity of service.

The concentration of generating machinery in stations of large total output, thereby developing power under conditions of low operating and maintenance costs, is proving to be the greatest factor in the development of cheap power. The year shows a consumption of some 15,000,000,000 kw.-hr. of electrical energy in the United States. Of this total consumption less than 36 large central stations developed 9,000,000,000 kw.-hr. The census statistics for the total revenue of all plants operated in the United States in 1912 (*A. Y. B.*, 1914, p. 556) indicate that 92.3 per cent. of the total energy was generated in commercial plants and 7.7 per cent. in municipal plants. Of the municipal plants 84.9 per cent. were in communities of less than 5,000 population. A consideration of these figures shows the tendency, already noted, toward the development of power in large stations within densely populated districts, with the outlying country supplied over high-tension lines. Transmission at from 100,000 to 150,000 volts, as practiced by some 30 stations in the United States, is a large factor in the distribution of energy to small towns otherwise not in a position to enjoy modern facilities. The growth of farming and small commercial centers in Utah, Montana, Idaho and Washington during the

year has been largely due to the use of electricity for lighting and power, particularly for pumping, and for electric traction. The region near the Yakima and Columbia Rivers, and the Walla Walla Valley have shown exceptional development, due largely to irrigation, which has been made possible by electric motor-driven pumps. An average cost for irrigation per acre per year in this district is from $6.00 to $7.00, with energy supplied at from 1.25 to 3 cents per kilowatt-hour. The average power required is one horse-power for each six acres irrigated.

An interesting phase of development looking toward increased continuity of service is the conversion of ordinary coal-fired steam plants into quick-firing emergency plants, the normal steam-plant load being taken over by newly installed hydro-electric stations. A number of prominent stations in the Middle West and Pacific Coast districts which have adopted this system use oil jets or coal dust blown into the firebox. A few out of a large number of boilers are fired continuously in order to keep hot water circulating in the entire battery of boilers. Synchronous generators connected with the turbines are sometimes operated as synchronous motors "floating" on the line, thus making it possible to carry the emergency load without interruption. Prominent among such installations are those of the Pacific Gas and Electric Co. of San Francisco, and of the Denver Gas and Electric Co. of Denver.

Electric Traction.—Some ten years ago the use of the electric locomotive for heavy traction was considered inadequate and not at all feasible from the standpoint of economy. To-day there are a great many large lines contemplating the electrification of congested terminals and even considering main-line electrification. In fact, the Chicago, Milwaukee & St. Paul Railway has already installed electrical equipment throughout 200 miles of mountain main line, and have completed plans for the electrification of 440 miles more. It is of interest to note that the basis of this decision is solely that of economy. During the year the Norfolk & Western put under electric power about 30 miles of its main double-track line from Vivian to Bluefield, W. Va., a heavy coal-handling division of steep grades and frequent curves. As regards terminal electrification to relieve congestion, the Pennsylvania Railroad completed in 1915 the electrification of its main line from the Philadelphia terminal to Paoli, and all local trains in this suburban district are now operated electrically.

There are in general two systems of electrification used for long-distance electric traction, the high-voltage direct-current system and the single-phase high-voltage alternating-current system. In the direct-current system there is a noticeable tendency toward increased potentials. Systems of 3,000 volts (Chicago, Milwaukee & St. Paul Railway) and 2,400 volts direct-current are giving perfectly satisfactory service in every way. The Butte, Anaconda & Pacific lines, the Bethlehem-Chile Mines Co. in Tofo, Chile, the Michigan Railway Co., and the Canadian Northern Railway are examples of recent 2,400 volt direct-current railway electrifications. The high-voltage alternating-current system was chosen in preference to the direct-current system for the Pennsylvania terminal electrification in Philadelphia, largely on account of the economies afforded by the high-voltage transmission and overhead line construction. The 25-cycle energy is transmitted between sub-stations at 44,000 volts, with frequent outdoor type transformers feeding the trolley at 11,000 volts. The increased speed in the handling of the local traffic by electricity as compared with steam is expected to double the capacity of the trackage in this terminal.

The Norfolk & Western Railway uses a composite single-phase three-phase system. Single-phase energy is transmitted from the powerhouse to the locomotive, where it is converted into three-phase energy by means of rotating phase-converters on the locomotive. The locomotives are of the articulated type, each with two main trucks and two driving axles, and are equipped with three-phase motors. The control equipment on the locomotives is designed for regenerative breaking.

Few marked changes or large new installations have been noted in the

electrification of interurban or city railways during 1915. The Toronto Suburban Railway and the Willamette Valley Southern Railway have electrified their suburban roads at 1,500 and 1,200 volts direct-current, respectively. The city street cars in many large cities have found competitors in the five-cent fare bus, popularly known as the "jitney" bus. This has not greatly affected the revenues of the railway companies, but in most places the schedules have been increased to meet the new form of competition. In a few cases the railway companies have established bus lines to compete with the privately owned vehicles.

Lighting and Illumination.—The rapid improvement in the efficiencies of incandescent lamps has decreased the cost per candle-hour to 15 per cent. of what it was a few years ago. The year 1915 shows great progress in the use of incandescent lamps for highway and residential lighting, and also for the lighting of factories and other industrial establishments.

The gas-filled tungsten lamp, ranging in power consumption from 100 to 1,000 watts and giving approximate candle powers of from 200 to 2,000, has had its greatest application in factory, store and street lighting. The tungsten lamps, including both the vacuum and gas-filled types, have now displaced the carbon lamps in the ratio of four to one. To produce proper intensity without glare or shadows, direct and semi-indirect lighting fixtures are being used to a greater and greater extent. Improvements in the glassware for fixtures have been so successful as to give the effect of a light source of uniform intensity over the entire surface of the globe, yet transmitting approximately 90 per cent. of the light rays. The approximate relative production and sales of the several types of incandescent lamps during the year 1914 were as follows: carbon filament, 8 per cent.; metallized filament, 22 per cent.; tungsten filament, 70 per cent. Recent statistics show that the tungsten lamp sale for the year 1915 will reach 80 per cent. of the total, with only about six per cent. for the carbon lamp, and 14 per cent. for the metallized filament lamp.

The year marks a steady increase in the use of incandescent lamps, chiefly the gas-filled type, for highway lighting, these new illuminants replacing the old carbon arcs on both alternating- and direct-current circuits. The flaming arc and the luminous or magnetite arc lamps are still used where very high candle powers are desired. The efficiency of these latter types is of the order of 0.5 watts per candle, a figure which prevents their replacement by other lamps.

The Illuminating Engineering Society has recently published a "Code of Lighting for Factories, Mills and Other Work-Places." This code defines what should be considered standard practice in natural and artificial lighting in industrial work-places, and also considers such questions as the maintenance and upkeep of the lamps, reflectors and globes.

The illumination of the Panama-Pacific Exposition marks an unprecedented advance in lighting of large areas with a uniform intensity and absence of glare. Throughout the grounds the light sources were screened. A soft flood-light illuminated the exhibits within the buildings, producing pleasing harmonious effects. The lighting of the exterior of the buildings varied from softly illuminated façades to strongly illuminated towers. The display lighting involved the use of specially designed projectors, scintillators, and reflecting surfaces of elaborate design. Some of the most striking night effects were produced by colored beams of light from the projectors playing over clouds of smoke and steam. Towers and columns decorated with glass "jewels" reflected the beams from other projectors. Two fountains rising 95 ft. above the sunken gardens were illuminated at night by tungsten lamps approximating 500,000 c. p. Luminous arcs were used singly and in groups of five, seven, nine and thirteen lamps to a standard.

Electrical Features of the Panama Canal.—A review of progress for the year would be incomplete without mention of the special equipment for the control of the locks and waterways of the Panama Canal. The value of the Canal is wholly dependent on safe manipulation of the lock

machinery and quick towing of the vessels through the locks. In order to insure these necessities, and at the same time provide an equipment which could be operated economically, electrical energy was chosen. The Gatun hydro-electric station which provides all the energy used throughout the Canal Zone is located at the Gatun spillway. Three 2,000 kw. water-wheel generators rated at 25 cycles, 2,200 volts, distribute energy to four substations located at Cristobal, Gatun, Miraflores and Balboa. The transmission voltage is 44,000, being stepped down at the substations to 2,200 volts. In order to provide emergency power, the steam plant at the Miraflores locks, erected for construction purposes, will be used as a reserve station. Four 1,500-kw. Curtis steam turbo-alternators and one alternator of 2,000-kw. capacity are installed at this plant.

The ships are towed through the locks by electric locomotives running on tracks along the edge of the canal walls. The same locomotives are also used to guide and tow the ships through the level stretches of the canal, where the latter is too narrow to allow them to proceed under their own steam. Each locomotive is capable of exerting 43,000 lb. pull on the towing cables. Four such locomotives are the usual number for handling one vessel, but two more can be used for the larger merchant ships and battleships. The locomotives are operated by three-phase motors receiving energy from two contact rails below the surface, with the track rails serving as the third conductor. A rack placed between the track rails engages cogs on the driving-wheels of the locomotive. This design was made necessary by the extreme grades (44 per cent. maximum) met with in passing from one level to the next.

Special motors, with interconnecting mechanisms to valves, gates, pumps and cable-drums, were designed and installed within chambers and tunnels located in the lock walls. All this electrical machinery, as well as that in the central stations and substations, was provided with moisture-proof insulation. Operation of these motors is by remote control and is under the supervision of an operator in charge of a central control board. At Gatun the entire equipment along 4,100 ft. of the locks is controlled from one switchboard. This control board is of horizontal design, having upon it control switches and a miniature layout of the locks, showing the relative positions of gates, chain-fenders, etc. Water-level indicators, synchronous indicators for marking the positions of gates, valves, etc., are also located on the board. These are automatically operated by interconnection with a transmitter located at the various machines in the lock walls. By an intricate arrangement of interlocking bars, actuated by the control-switch handles, the operator is prevented from moving machinery out of its regular sequence of operation. During the first year of commercial operation of the Canal the electrical equipment throughout has proven to be most satisfactory.

Research and Invention.—Industrial life has now reached a stage where the research laboratory is an indispensable factor in the production of apparatus to fill the demands for high efficiency combined with long life, safety and economy. While 1915 has not shown remarkable progress in research and invention, still the results achieved have been definite and of importance.

The investigations carried on in 1914 relative to nitrogen-filled lamps have been continued, resulting in the production of a cheap lamp having high efficiency and long life in sizes as low as 100 watts. This low-capacity unit was perfected during 1915.

A new device, the "kenotron," for rectifying high-tension alternating currents within a vacuum tube has been developed and successfully applied. This tube contains two electrodes, one of which is heated to a high temperature from some external source. Electrons emitted from the hot cathode form the rectifying medium. The kenotron is essentially a high-voltage, low-current rectifier. Voltages up to 70,000 and currents up to 400 milliamperes have been successfully rectified.

The importance of a homogeneous solid casting without "blow-holes" cannot be overestimated in the construction of all classes of machinery.

To facilitate inspection and study of the nature of such imperfections the "X-ray" tube has been successfully used to take "radiographs" which clearly bring out the defective portions of an apparently solid casting (see *Physical Properties of Metals and Alloys, infra*).

The most valuable investigations in the research laboratory during the year have been those on insulation materials. While the new principles developed have not been fully tried out commercially, they give promise of making possible an appreciable reduction in the cost and an increase in the efficiency of many types of electric apparatus. Chief in importance are the investigations of the deterioration of porcelain insulators as caused by electrical and mechanical strains. The use of tinfoil "condenser" plates interleaved with the insulating tapes on high-voltage alternator coils has been an advance over former designs. By this means the electrostatic strains are evenly distributed throughout the insulation of the windings. The application of fireproof and high-temperature resisting insulations is doing much toward reducing the cost and increasing the life of many electrical devices.

Industrial Applications.—While no exact figures are available, the following is a fairly close estimate of the electrical horse-power used in the more important industries:

	Horse Power
Manufactures	12,000,000
Street and electric railways	5,000,000
Mines and quarries	1,700,000
Flour, grist and saw mills	800,000
Irrigation	400,000
Automobiles	200,000
Total	20,100,000

The total mechanical and electrical horse-power used in the United States is estimated at approximately 150,000,000 horse-power, or 1.5 horse-power per capita for the entire population.

In manufacturing processes the iron and steel mills and the metal-refining plants consume the largest proportion of electrical energy. Next in order come the manufacturers of electrical machinery, automobiles, mechanical machinery, canneries, garment factories, brick and clay factories, and manufacturers of special products. Of the power consumed in electric railways by far the greatest amount is used for city street railways and for interurban lines. The year 1915, however, as noted above, shows a marked tendency toward an increase in main-line electrification. Applications of electricity to the mining industry have resulted in larger productions of both metal and coal at lower cost per ton mined. The more important applications are for pumping, hoisting, traction, ventilation, lighting and air compressor driving. Flour, grist and saw mills use motor drive for grinders, rolls, elevators and belt conveyors, saws and other wood-working machinery. The year 1915 marks an unprecedented advance in the application of electrical energy to the many needs of the farmer. Agricultural districts in many sections of the country have been greatly aided by increased facilities for irrigation and cultivation of the soil, made possible by the extension of power lines. Finally, the automobile industry owes its remarkable progress, in part at least, to the electric motor and the storage battery; to the electric motor in manufacturing process, and to both the motor and battery for the power unit on electric trucks and pleasure vehicles, and for starters, lights and other accessories on gasoline-driven cars.

MECHANICAL ENGINEERING

CALVIN W. RICE and LEON GOLDMERSTEIN

Engineering and the War.—Under the shadow of the great war in Europe, mechanical engineering during 1915 was under the conflicting influences which such a time was likely to produce. On the one hand, it was early realized that, above all, this was going to be a "war of engineering," and mechanical engineers were called upon for help in the production, on an unprecedented scale, of the machinery of war; on the other hand, the economic and industrial conditions were such as to impede normal development work and to force the abandonment of many valuable technical in-

vestigations, especially when they were financed from funds from European Governments.

On the whole, however, American mechanical engineers may well feel proud of the work done. They had suddenly to face demands for products never before produced on so immense a scale, products moreover which had to be made under unusually strict specifications, and which, in many cases, have been hitherto manufactured in plants conducted on a non-commercial basis of production. Confronted with such a situation, the engineers had, in a very short time, to develop methods which would enable them to apply to the new production, without sacrificing either quality or quantity of output, old machinery not primarily intended for it; they had besides to create ways of handling the new lines in plants built for entirely different purposes; and the fact that all these and many other difficulties were successfully met and overcome is a brilliant proof of the high level attained by engineering in this country.

These facts did not fail to be officially recognized. The Secretary of the Navy appealed to Thomas A. Edison and the leading engineering societies to form an Advisory Board, to the work of which Mr. Daniels attaches a very high importance (see also XII, *The Navy*). The engineer is gradually coming into his own in the popular and official recognition of the work which he is doing—great work, but done with so little noise that it was not properly noticed until exceptional circumstances directed to it the attention of the world.

Manufacture of Munitions of War.—When the war in Europe began, no one seemed to realize the tremendous expenditure of ammunition and the rapid wear of equipment which it would entail. The last previous war, that between Russia and Japan, showed the great influence of artillery and machine guns on the outcome of battles, but the number of battles was quite small, they were months apart, and the total expenditure of shrapnel, for example, on both sides during the entire war could hardly have exceeded two million shells and was very likely considerably below that number. In the present war battles are being waged practically continuously on fronts of hundreds of miles, and the artillery fire is of such intensity that on an average each side spends probably not less than 100,000 shells a day, an amount so stupendous that the arsenals and munitions factories of Europe proved inadequate to supply the demands. Other factories which previously had nothing to do with the production of ammunition had to be converted to the new use.

First came such factories as those of automobile, bicycle and sewing-machine makers, as they had been previously equipped for working to close gauges and had machinery which could be utilized more or less easily for the new purposes. Then locomotive and railroad repair shops were utilized, while at the same time, shops making delicate machinery, such as typewriters, adding machines and scientific instruments, were drawn into service and given fuse parts to make. All this, however, still proved inadequate, and the overflow of the business was given to foreign concerns, especially American and Canadian manufacturers, this tendency being considerably facilitated by the fact that, owing to the financial upheaval produced by the war, times in America were dull and regular business very slow.

The first orders obtained by American manufacturers were for shrapnel shells and rifles, but in the latter part of the year the manufacture of shrapnel apparently has been fully taken care of by the home factories, and it is principally the manufacture of high-explosive shells of various sizes that has come over to American concerns during the later months. There were several interesting features in connection with this line of production. In the first place, the manufacture of shells, both shrapnel and high-explosive, created a tremendous demand for various classes of metal-working machinery, in particular, hydraulic presses for drawing the case, steam hammers for nosing-in the shells and various lathes for machining them. In view of the fact that all the war orders had to be filled in a hurry, the American plants have acquired an immense equipment.

To a certain extent this may be used, after the war is over, for other purposes, but other parts (this applies particularly to the short-bed lathes) are good practically only for the production of munitions of war. As practically all of this equipment will be paid for out of the orders now being executed, at the end of the war the United States will possess a productive capacity of probably close to 50,000 shells a day, if not more, with the entire equipment fully paid for and a large number of skilled engineers and workmen available. It appears certain that the United States is now destined to become one of the great producers of munitions of war, both for its own use and for export.

The manufacture of rifles has led to a strenuous development of woodworking machinery for stock making, in particular, of copying lathes; while the earlier stock-making machinery has been obtained mostly from Europe, especially Switzerland, copying lathes of high efficiency are now being made in this country. This fact is of special importance because it applies equally to metal-working machinery, for which there has been and is likely to continue a big demand from European arsenals and munitions factories.

Machine Tools.—The tendencies of 1914 towards the use of higher speeds, finer unit feeds, and the development of jigs, fixtures and holding devices which may be operated in a minimum of time, continued to operate also in 1915. The year also has played an important part in the development and introduction of the so-called "station-type" machine, which means a machine in which there is a position for putting in and taking out work, and other positions for performing successive operations. As a tool it is not new, and machines of this type have been built for special jobs, but it is only within the last year or two that such machines have been placed on the market in a form adapted to a wide variety of work. Their main purpose is to fulfil the demand for quantity production with unskilled workmen, and to make possible an increase in production with a possible decrease in the accompanying overhead expense.

Power Generation.—No new developments can be reported in the field of power generation. The application of Diesel engines for the driving of ocean-going vessels, from which so much was expected a few years ago, has not proved to be as simple a matter as was thought at first and grave doubts have been lately raised as to its commercial possibilities. According to William Scholz (*Zeitsch. Verein. deutscher Ing.*, Jan. 30, 1915), comparative data of a steamer and a Diesel-engined ship for a two-months' trip have proved that the four main sources of expense, fuel, wages, lubricants and depreciation, show an advantage in favor of the Diesel-engined ship. The items of general maintenance and unforeseen expenses, however, proved to be quite heavy for the latter, while repairs and replacement of parts, especially in out-of-the-way places, are far more difficult than on steamers.

On the other hand, in stationary plants, especially where it has to handle a more or less uniform load, the Diesel engine continues to be a formidable enemy of both the steam engine and the steam turbine. Thus, in the electric plant of the city of Palo Alto, Cal., it was found that the existing steam engines could not carry the usual peak loads. If replaced by a turbine, the turbine would have run during the greater part of the time at only about 20 per cent. of its rated capacity, which would make operation inefficient. It was found that a Diesel engine of moderate size could be installed to take care of the light-load hours (say 10 p. m. to 6 p. m.), and to be helped out by one of the steam engines during the peak-load period. It is of interest to note that the city of Palo Alto, on a comparatively quite small installation (peak load only about 340 kw.), has saved $20 a day by adopting the Diesel engine instead of the steam turbine.

Steam Engineering.—In steam engineering further progress has been made in the investigation of the properties of superheated steam. It is of great importance to know the exact relation between the specific heat of steam on one hand, and pressure and temperature on the other. A mathematical formula known as the Clau-

sius thermodynamic relation does give it, but while the derivation by means of this formula of pressure from specific heat, which is of little practical importance, is easy, the far more important derivation of specific heat from pressure is very difficult. Equations for the latter derivation were proposed some years ago (*Trans. Am. Soc. Mech. Engrs.*, xxxiv) by Professor Goodenough of the University of Illinois, but until lately there has been no positive proof that they were correct in the doubtful region of high superheats. During 1915 the investigations of Knoblauch and Winkhaus (Laboratory of Technical Physics, Munich) have been published, covering regions of pressure up to 420 lb. gauge, and showing that both the Goodenough equation and the older and inverse equation of Linde give results in fairly close agreement with observed values. These investigations are of particular interest as they cover fully what may be called the present range of commercial steam pressures. The term "present range" is used advisedly, as there are already indications that we are on the eve of the application of far higher pressures (4,000 lb. per sq. in. and more) in such processes as the generation of hydrogen by the decomposition of steam, which may in a few years carry our steam tables into fields entirely beyond our ken to-day.

The fundamental conceptions underlying the design of heat-transfer apparatus are becoming clearer every day, a good deal of light having been thrown on this subject by experiments conducted within the last couple of years by the various departments of the U. S. Navy. During 1915 two interesting papers have been published embodying the main results so far attained, one by Leo Loeb (*Jour. Am. Soc. Naval Engrs.*, May, 1915) and the other by E. E. Wilson (*Jour. Am. Soc. Mech. Engrs.*, Sept., 1915).

As regards steam prime movers generally, one is reminded that mileposts in the progress of an art are sometimes more clearly marked by what is scrapped than by what is installed. In 1901 the E. P. Allis Co. of Milwaukee installed at the Seventy-fourth Street station of the Manhattan Railway Co., New York City, four 5,000-kw. direct-connected units. They were then the largest stationary engines ever built, and they were so well built that after more than a decade of strenuous work their steam consumption remained about as good as on the day they were installed. Nevertheless they have now been broken up for junk, because it was found that a single cross-compound steam-turbine unit of 30,000 kw. could do the work of all the four engines and more, and do it better and cheaper. The new unit really consists of two turbines, high and low pressure, built side by side; each drives a generator, the two generators being tied electrically although running at different speeds. The main advantage of using different speeds in the turbines is to adjust the relation of steam velocity to blade speed.

Important though less spectacular progress has been made also in the utilization of low-grade fuels. In the boiler plant of the Bessemer Coal and Coke Co., at Russellton, Pa., arrangements have been devised which permit the burning of a grade of fuel for which there is no market. They have there good coal interleaved with strata of "bone," an agglomerate of slate and coal. Formerly this bone had to be hoisted up and carted away at considerable expense and trouble. It is now passed through a system of two crushers and delivered through overhead bunkers to Taylor three-retort underfeed stokers, each of which takes care of a pair of boilers. The commercial results of the new installation have been quite gratifying, as the saving, in a plant of less than 1,000 h. p., amounts to considerably over $100 a day.

In Germany a similar situation, though due to very different causes, had to be met. The war caused a material shortage and corresponding rise in price in the regular grades of coal used for boiler firing. Resort was had to coke firing, and an extensive and rapidly organized system of tests has shown that gas coke is more suitable for this purpose than blast-furnace coke. Large sizes can be burned on flat grates only when a strong draft and good grate cooling are available, as, for example, in locomotives, but small-sized coke can be

burned on ordinary flat grates without any trouble when mixed with a proper grade of coal and certain simple rules of firing are observed.

In the direction of insuring higher safety of boiler operation, the most important step taken during the year was probably the definite adoption of a "Boiler Code" by the American Society of Mechanical Engineers. There is now a strong accumulation of evidence that it will be widely adopted throughout the country as a standard of boiler construction and inspection. It has already been officially adopted by statute by the states of Wisconsin, Ohio, Indiana and Pennsylvania, and by city of Detroit. An American Uniform Boiler Law Society has been formed to promote the adoption of the code by legislative bodies. After all, as Professor R. H. Thurston stated long ago, "boiler explosions are *always* preventable; it is *always* practicable to so design, construct and manage steam boilers that there shall be absolutely no danger of explosion."

Internal-Combustion Engineering.—The question of using benzol in internal-combustion engines has been attracting the attention of engineers for a considerable time, especially in Germany, where large amounts of benzol are available as by-products of certain industries and where there has been a consistent desire to become independent of imported gasoline fuel. Benzol is not adaptable for use in Diesel engines on account of its endothermic character, but in explosion engines it can be used provided the tendency to form carbon deposits is overcome. This depends, however, on the conditions governing the normal combustion of benzol and it was not until 1915 that extensive data of any investigation of this matter have become available. Data, of experiments carried out in a mechanical laboratory of the technical high school at Karlsruhe, Germany, have now been published in the *Journal für Gasbeleuchtung* (lvii, nos. 39 to 41).

Another interesting experimental investigation has been carried out in the mechanical-engineering laboratory of the Royal Technical College, Glasgow. This was made on a special Diesel engine, and since the conditions of operation of the Diesel engine are such that with the usual reciprocating indicator diagram the record of the special changes is crowded into a very small space, the experimenter, W. S. Burns, developed an ingenious arrangement for taking rotary indicator diagrams. The main questions investigated were the influence of variation of blast pressure and of jacket-water temperature upon the running of the Diesel engine.

This question of jacket-water temperature in internal-combustion engines has attracted considerable attention in the last year or two. It is a well known fact that with an ordinary water supply an engine will run satisfactorily when the temperature of water is around 150° F., but if the temperature of the water in the jackets is allowed to rise, the cylinder will burn or even score before the jacket water reaches, say, 250°. A series of experiments made by J. B. Merriam have shown that the whole secret of the difficulty of running an engine with the jacket-water temperature above 150° lies in the fact that small bubbles begin to form in the water and adhere to the surface of the iron. These bubbles increase both in number and size with rise of temperature and by the time the water has reached 200° the inside surface of the vessel seems to be entirely covered with them. Thus spheroidal action takes place and constitutes a serious interference with the flow of heat or, which is equivalent to it, the cooling effect of the water. It was further found that if the water is disturbed, the bubbles break off while still quite small, the size of the bubbles decreasing as the velocity of flow of the water increases. As a result a new type of water cooling has been designed, the velocity of water being maintained at from five to ten times that ordinarily used. The temperature of the water is such that when it escapes from the cooling system proper it flashes into steam which is used in a special exhaust boiler. Tests have shown that no difficulties or detrimental effects have been experienced with the water jackets under full steam pressure and temperature, while the thermal efficiency of the engine has been quite materially improved.

One of the problems which appears to have been solved during the year is that of utilizing lignite coal tar. It is obtained as a by-product from gas producers, but cannot be profitably handled commercially because of its high content of water (up to 40 per cent.). A German engineer, Victor Schon (*Jour. für Gasbeleuchtung*, lviii, no. 17), has found that if the tar is reintroduced into the gasification chamber of the producer gas furnace and gasified there, the otherwise undesirable high water content does not matter, because the water escapes with the other vapors and gases.

Railway Engineering.—There have been no spectacular developments in the field of railway engineering during the year but a large amount of useful work has been done. The large steam locomotive continues to be of paramount interest. For freight and pushing services on heavy grades past performances have shown the adaptability of the articulated compound locomotive and the indications are that it will be the generally accepted type for these conditions for some time to come. For freight service on easy grades there are already exceptionally large locomotives of the six-, eight- and ten-coupled types in which the parts used are of enormous size. Simple cylinders operating at 200 lb. pressure have reached a diameter of 30 in. and in order to transmit the power a main axle 13 in. in diameter has been used. There is also a revival of interest in the three-cylinder arrangement for locomotives, especially those intended for high-speed passenger service. The main difficulty with the three-cylinder arrangement is that it involves the use of a crank, but one may confidently expect that the skill shown by American locomotive engineers in grappling with the problems of increasing sizes and stresses in the design of present-day locomotives will prove equal to the solution of this problem of design.

Several new types of locomotives have been sent out on the road during the year, and although none of them is equal in size to the Erie Centipede of 1914 (*A. Y. B.*, 1914, p. 566), they are of considerable interest in many respects. The Lackawanna Railroad placed in service a Pacific-type locomotive equipped with a special type of firebox designed by S. S. Riegel. In the construction of this firebox water tubes are used in such a manner as to provide definite cycles of circulation in the zones of greatest heat intensity as well as to locate the heating surfaces to greatest advantage. During test runs enough information has been secured as to the performance of this locomotive in comparison with its sister engines to make it reasonable to expect that this type of boiler will prove to be an entire success.

The Santa Fe Railroad has received from the Baldwin Locomotive Works a simple Pacific-type locomotive, showing a return to the use of single-expansion engines on that railroad. A number of Pacific-type locomotives of a new design have been placed on the road by the Chicago, Burlington & Quincy. In these locomotives, designed to weigh approximately 170,000 lb. on the driving wheels with a limit of 60,000 lb. on any one pair, special attention has been given to the design of the reciprocating parts and other machinery details with a view to reducing as far as possible the dynamic augment on the rail when running at high speed (*cf. A. Y. B.*, 1914, p. 566). As a result of careful design of pistons, piston rods, crossheads and other parts, the dynamic augment, as actually balanced, amounts at the speed of 70 miles an hour to approximately only 38 per cent. of the static weight for the front and back driving wheels and 28 per cent. for the main wheels. The proportion of the reciprocating weight that has been balanced is 61 per cent. and this is equivalent on each side to 1/202 of the total weight of the engine.

Some new Mountain-type locomotives have been placed in service by the Seaboard Air Line to replace Pacific-type superheater locomotives. This was done because of the inability of the locomotives of the Pacific type to maintain a sufficient speed up grade with ten or more steel cars. As a matter of fact, the Pacific-type locomotives when hauling 11 cars would drop back to speeds as low as 18 or 20 miles an hour before reaching the

top of the heaviest grades, while Mountain-type locomotives have on some occasions maintained a speed of 35 miles an hour when hauling a train of 12 loaded cars up the same grades.

The tendency to reduce the dynamic augment on the rail, referred to above, has been largely supported by an increasing understanding of the conditions under which the rail works. During the year there have been published data of an extensive investigation of the lateral stresses in rails both on straight track and on curves, a subject on which there has been previously more conjecture than reliable information. From tests on straight track it appears probable that the blow delivered or the stress imposed at any particular point is more dependent on conditions of the roadbed than on conditions of the locomotive. Contrary to previous assumptions, there is no tendency for the locomotive to nose, that is, to go from one rail to the other at regular or irregular intervals and in so doing put a heavy pressure on one rail while there is a light one on the other. The maximum pressure is apt to follow a comparatively low pressure on the same rail. A very large amount of side play in the axle boxes evidently serves to relieve the lateral thrust of the wheel on the rail. Judging from the diagrams of trains, the severity of stresses put on the rails by the locomotives tested stands in the order, ten-wheel, Mikado, Pacific, Consolidation, increasing from the first to the last. Nevertheless, the main impression left by the test is that the track conditions are the controlling elements in track stresses, and that it is not yet possible to predict what will be the effect of any individual locomotive at any speed on any track.

In this connection attention may be called to the Pennsylvania's 1915 specifications for 100- and 125-lb. rails, of particular interest because of the fact that a new rail section has been adopted. It has been stated that because of the better distribution of material, the 125-lb. Pennsylvania rail, as far as strength is concerned, is at least equal to, if not better than, the 135-lb. Jersey Central rail.

Further progress has been made in the introduction of steel passenger rail equipment. The bulletin of the Special Committee on the Relations of Railway Operations to Legislation (No. 67) shows that for cars acquired during the past six years the percentage of all steel cars has increased from 26 to 74.6, while the percentage of new wooden cars has steadily decreased from 51.4 per cent. in 1909 to 4.5 per cent. in 1914. The following table indicates the character of the various classes of equipment in service on December 31, 1914, the latest data available:

	Steel	Steel underframe	Wood
Postal	888	217	461
Mail and baggage	668	404	2,562
Mail, baggage, and passenger	31	56	579
Baggage and passenger	528	227	3,519
Baggage or express	1,478	1,315	7,507
Passenger	5,105	1,704	22,266
Parlor, sleeping and dining	3,200	1,526	5,353
Business	32	109	730
Motor	970	142	535
Total	12,900	5,700	43,512

Air Engineering.—Full data of the tests of the turbo-compressor built in Germany for the Rand Mines, Ltd., of South Africa, the largest air compressor in the world (*A. Y. B.*, 1914, p. 565), became available during the year. The tests have shown that the tremendous advance in the size of the compressor has been accompanied by a not less important advance in efficiency, which is at least 10 per cent. above that previously obtained. From the figures given it is probable that three-quarters of the energy of the steam is convertible into mechanical work on the shaft of the turbine, and of the work on the shaft two-thirds can be utilized in the isothermal compression of air with compression ratio of nearly 12. The same tests have shown that the modern methods of measuring the flow of air and water (orifice method) have an accuracy practically equivalent to the commercial accuracy of electrical measurement.

Among the new apparatus introduced during the year may be men-

tioned the air pump with no clearance invented by E. W. Christie. In this pump the problem of clearance is solved by using a central belt port (like the unaflow engine's exhaust) for an inlet port and making the cylinder head the exhaust valve. In shop tests a vacuum in excess of 28 in. has been maintained without difficulty (*Compressed Air Mag.*, Feb., 1915).

An unusual combination of air compressor and vacuum pump has been designed by Tilghman's Patent Sand Blast Co. of England, for the pneumatic tube transmission at the Manchester Post Office. The pressure cylinder is bolted direct to the enclosed crank chamber and the vacuum cylinder is placed behind the pressure cylinder, being secured to the back of the latter by means of a distance piece which also provides for the true alignment of the cylinders. An interesting feature of the machine is that special attention has been devoted to secure a low air velocity through the ports and passages in order to obtain a high overall efficiency. The valves, of the automatic multiple type, consist of a series of perfectly plain, thin steel discs working on a removable cast-iron seating, with a special guard plate bolted to the seating, to control the life of the discs.

The problem of measuring air at high pressure and in unprecedented volume, encountered at the Brooklyn Sewage Experiment Station, was solved by Geo. T. Hammond and the firm of Wallace & Tiernan, of New York, by the use of special Venturi meters. An interesting feature of the new meters is the use of interchangeable throats, as a result of which one meter can do the work with accuracy throughout a range for which five meters would formerly have been required.

Aeronautical Engineering.—One of the most astonishing developments of the year was that of heavier-than-air flying machines. From a small, unreliable flying machine apparently good for exhibition purposes only, the aeroplane has developed by gigantic strides into a carrier of immense power and promise. The war in Europe practically created the aeronautical industry of to-day. There appeared an insistent demand for a machine that would fly 300 to 400 miles without replenishing its fuel reserve and carry in addition a considerable useful load. As usual, engineering skill responded promptly and with great success. The last Curtiss machine of the Canada type is said to have a span of 102 ft., and even that is already being exceeded in the super-Canada Curtiss machines and the big war-planes of the French Army, which latter have a span of 130 ft., and judging from official despatches, are able to carry a gun which cannot well be less than a one pounder. Complete data are not available as to the production of aeroplanes in France or the United States, but from reliable information, it appears that over 100 machines a week are being built in England and that not less than 17,000 men are engaged in the direct production of the heavier-than-air flying machines, this number not including those engaged in the production of auxiliary parts and equipment. (See also *Aeronautics, infra.*)

Automobile Engineering.—Only three years ago there were heard predictions that "the present day automobile has reached such a high state of perfection that hardly any radical developments can be expected." Since then the streamline design of the body and the electric starter have become practically universal in the construction of all of the higher class cars. The year 1915 has brought another refinement in design in the wide introduction of engines having a number of cylinders in excess of six. In the YEAR BOOK for 1914 (p. 567) it was predicted that the step taken by the Cadillac company in introducing an eight-cylinder engine would be rapidly followed by other manufacturers. This is what has actually happened and there are at the present not less than eight makers of eight-cylinder cars.

The eight-cylinder motor is not, however, the *ultima thule* of automobile engine refinement. For mechanical reasons, the stationary engine may have two, four, six, eight or twelve cylinders. The two-cylinder stage was passed forever about 1902; the twelve-cylinder engine was used

on one or two racing cars a few years ago, but it remained for the year 1915 to see its successful introduction on several cars as a commercial proposition. Naturally, the multiplication of cylinders has provoked a spirited discussion among automobile engineers, in which it is pointed out that while a twelve-cylinder motor, or a twin-six, as it is more usually called, gives, when well constructed, a flow of power unequalled in continuity, it really does little or nothing that a powerful and well built six-cylinder motor could not do. At the same time its initial cost is higher, and as one of the speakers remarked at a meeting of the Society of Automobile Engineers, those who are anxious to buy twin-six engined cars may change their opinion when they begin to get "twin-multiple bills" for valve grinding and other repairs. There can be scarcely any doubt, however, as to the fact that the twelve-cylinder engine has come to stay, and while it is unlikely that it will ever be much used on moderate-priced cars, although attempts in this direction are already being made, it will probably be in good demand for heavy machines.

In the case of both the eight- and twelve-cylinder motors, what is to a large extent a new construction in automobile design has been introduced and proved successful, namely the V-type motor. While V-type engines have been used before on racing cars and on one or two European designs, it was the eight and twelve cylinders that made them familiar to the American automobile engineers, and there can be scarcely any doubt that they have come to stay. It is quite likely that the success of the V-type motor has been prepared, to a certain extent, by reason of experiences with the V-type aeronautical engine, and in this respect attention may well be called to the fact of a growing community of interest between builders of road vehicles and of heavier-than-air flying machines. There is no fundamental difference between an automobile engine and an aeroplane motor apart from the fact that the latter is usually far more powerful, has to be lighter, and, because of all the peculiar conditions under which it has to operate, has to embody a somewhat different and secondary element of construction (this applies especially to lubrication and water cooling). It was only natural, therefore, that when an especially large demand for aeroplane motors arose in the past year, automobile engine builders felt that they should go into this new field. In France there is under consideration the idea of going back after the war and equipping racing cars with the regular aeroplane engine, which, it is supposed, will give them hitherto unexampled speed. In America the Packard Motor Co. announced that it will build such machines on a large scale, while the Simplex Motor Co. has been entirely taken over for this purpose by the reorganized Wright Aeroplane Co.

The twelve-cylinder engine set a very stiff problem for the builders of ignition equipment. A twelve-cylinder engine requires over 10,000 sparks per minute, each spark to be properly timed and of sufficient strength. One of the triumphs of engineering skill during recent months has been the design of a magneto to take care of such ignition which has proved entirely successful.

AUTOMOBILES

JOSEPH A. ANGLADA

The Automobile Industry.—The American motor-vehicle industry has reached its present magnitude because standardization of types, specialized manufacture of parts and a great volume of production have made possible prices that are within the financial reach of a great proportion of the people. Each factor has its own particular influence, but none is more potent than the specialized manufacture of parts which has developed extremely satisfactory design, while trade competition has compelled the use of materials of the highest grade. The result is that the builder of cars who makes the important parts of his assembly is the exception because it is now possible to purchase motors, axles, frames, steering gears, and in

fact all important units which enter into the assembly of motor vehicles, from various manufacturers of these parts at prices below those possible for the car builder to achieve, because the parts manufacturers relatively produce thousands of units while the car builder would produce hundreds. The stigma which was formally attached to the "assembled car" has disappeared, because the purchasing public appreciate that as a rule, the car builder can purchase parts from parts specialists for less money than the car builder could produce them of equal quality, so that the purchasing public obtain the advantage of quantity production in a more complete car equipment and decreased car price.

Statistics for the year ending Sept. 4, 1915, show that the production in the United States has been 703,527 cars, valued wholesale at $523,463,803, which is an advance of 36 per cent. in the number of cars and more than 10 per cent. in value over the previous twelve months. Sales of passenger cars of all types to June 30, which is the end of the year in the industry, were 665,826, for which the manufacturers received $450,941,131, while the sales of commercial vehicles of all types are estimated at 37,700, valued at $72,522,692. A report from the Secretary of State of New York states that on Oct. 1, 1915, 222,025 owners and dealers of automobiles in New York State have registered their cars. On the same date of 1914 the registration was 164,438, or 57,587 less. The total registration in New York State for the year 1914 amounted to 170,171, a figure that was passed during the first six months of 1915. The receipts of the New York State Automobile Bureau for the nine months to Oct. 1, 1915, amounted to $1,824,313, and it is estimated that the receipts for the entire year will exceed $2,000,000. The June census enumeration shows about 9,750,000 persons living in New York State, which indicates that in this state one person in every 44 owns or operates an automobile.

Automobile Design.—During the year American manufacturers have taken up the eight- and twelve-cylinder motors, which bid fair to become popular during the next twelve months, because of the rapid acceleration, due to the rapidity of the impulses, which provide a motor comparable in action with an electric motor; that is, these eight- and twelve-cylinder motors as compared with four- and six-cylinder motors possess what is technically known as an almost continuous torque or driving effort, especially at low speeds. At this time it is impossible to state whether the eight- or the twelve-cylinder motor will prove the more popular in the hands of the purchaser. (See also *Mechanical Engineering, supra.*)

The small high-speed four-cylinder motor continues to be popular in the small low-priced cars, while cars selling for upwards of $1,000 are almost invariably fitted with six-cylinder motors.

During the next twelve months there will be a decided movement toward the reduction of weight in all types of vehicles, brought about by the demand of the public for increased tire mileage.

There is a movement on the part of nearly all makers of pleasure cars to furnish bodies which, by the addition of a suitable canopy and windows, can be converted from the typical open touring body for summer use into a completely closed body for winter use. This is facilitated by the use of divided front seats which permit passage between the seats to and from the rear seat of the car and the use of one door for entrance to both front and rear seats.

AERONAUTICS

J. C. Hunsaker

The Aeroplane Industry.—The two years 1914 and 1915 have witnessed the passing of aeroplane record breaking and cup racing, but with the great war in Europe an enormous stimulus has been given to manufacturing. The first few weeks of the war demonstrated so completely the necessity for command of the air, that every effort has been made by the pow-

ers at war to increase their air fleets both in numbers and in strength of individual units. Russia and England have given large orders to American constructors both for naval and military aeroplanes. The magnitude of these orders has served to place aeroplane building upon a manufacturing basis. Several firms which in the past have been fortunate to build one aeroplane per month and then to spend a month more on trial flights and alterations have, under the incentive of large orders on generous terms, developed a few standard types, expanded their small shops into factories and are delivering several aeroplanes per week. Consequently, the facilities of the country for the rapid supply of aeroplanes have immensely expanded and the United States Army and Navy have been able to place larger orders with private builders than in any previous year and to obtain more prompt delivery. Paralleling the development of aeroplane manufactories, the builders of aeronautical motors have extended their resources in order to supply the increased demand for standardized reliable high-power motors. (See also *Mechanical Engineering, supra.*)

Aeroplane Design.—The effect of the war upon the design of aeroplanes has been as marked as its effect upon their conditions of manufacture. Most noticeable has been the rapid differentiation of type as imposed by military requirements for differing service. Of course, the final lessons of the war are not at hand, but up to the present time it appears there has been developed a demand for the following types:

(1) *Tactical Scout:* a small, extremely high-speed aeroplane of limited radius of action, extremely great climbing speed, armed with machine gun only; for service over the immediate field of battle.

(2) *Reconnaissance Scout:* an aeroplane of great radius of action for service on extended expeditions behind the enemy's lines. Such aeroplanes are two-passenger machines, unarmored, unarmed except for small bombs and arrows, and with as high speed and rate of climb as is practicable without sacrifice of endurance.

(3) *Bomb Carrier:* a great aeroplane of fair speed and endurance equipped to carry heavy bombs, armed with a machine gun and armored against small-arm fire, for service against the enemy's communications, especially railroad centers and supply bases.

(4) *Gun Carrier:* an enormous aeroplane of great speed and power, heavily armored and armed with one or more guns of greater than small-arm calibre, high rate of climb, great endurance; in short, an aeroplane designed to drive enemy scouts or dirigibles from the air or to conduct a reconnoissance in force when opposed by enemy aircraft. This type is now in process of development and since no compromise is made between the conflicting claims of speed, endurance, climb, and load it has been necessary to go to enormous sizes. The power demanded, over 300 brake h.p., is greater than that of the present-day motors, and such great aeroplanes are built with two or more separate power plants.

These types appear fairly distinct one from another. There are, of course, numerous modifications of these types to adapt them for special service, for example, artillery observation, the defence of cities from attack from the air, telephotography, convoy duty with dirigibles or with a bomb-dropping squadron.

As in warship design, the design of an aeroplane must be based on the requirements of service, and these in turn are based on the performance of enemy aircraft. Any technical improvement made by the enemy must be met and exceeded. Consequently, in time of war we may expect abnormal progress. In 1914, the so-called military tractor aeroplane corresponded to a "reconnoissance-scout" type and was fitted with a motor of from 80 to 110 brake h. p. The speed was from 60 to 80 miles per hour and endurance about four hours. In 1915 construction of motors of less than 100 brake h. p. has practically ceased and aeroplanes of similar speed and endurance are given from 125 to 160 brake h. p. The change is due to a demand for better climb and greater weight-carrying power. The "bomb-carrier" and "gun-carrier" types are yet in process of development. The

appearance of such aeroplanes with the French and British armies early in 1915 has been met by the Germans with equally powerful craft. The press reports are uncertain, but it appears clear that a virtual command of the air rests first with one side and then with the other.

The war has not yet developed distinct types of naval aeroplanes. Naval aeroplanes supplied from the United States to the belligerents have been of three types, a 140-h.p. twin-pontoon seaplane with a body enclosing motor and personnel between the wings, a 160-h.p. flying boat in which the personnel are enclosed in a true boat and the motor is mounted overhead between the wings, and a flying boat of enormous load and power. The light flying boats and pontoon seaplanes may probably be carried by scout cruisers, from which they may be sent on scouting trips in search of the enemy fleet, submarines, etc. In long-range gun fire, seaplanes have been used by the British Navy to observe the fall of shot in the North Sea cruiser engagement, at the Dardanelles, and in the bombardments of the Belgian coast. The function of the immense flying boats is reported to be ocean scouting in search of submarines, and their destruction by bombs when discovered.

Scientific Progress.—Aerodynamical research in the United States has been insignificant in quality and quantity since 1908 when compared with the work of the subsidized laboratories of Europe. During 1915 the U. S. Navy Department has erected at the Washington Navy Yard an eight-foot wind tunnel which is employed in experimental investigations. Also the Massachusetts Institute of Technology has erected a four-foot wind tunnel and organized a graduate course in aeronautical engineering. The first report of the work of this new laboratory was issued Jan. 1, 1916, through the Smithsonian Institution. Papers on the resistance of disks, aeroplane wings, bodies, airship hulls, etc., are included, as well as a discussion of velocity measurement and general wind tunnel procedure. The U. S. Navy experimental model basin has conducted extensive tests on models of flying-boat hulls and pontoons. These experiments are described by H. C. Richardson, *Smithsonian Miscellaneous Collections* (lxii, no. 2, "Hydromechanic Experiments with Flying-Boat Hulls").

The International Engineering Congress which met at San Francisco in September had presented before it four papers upon aeronautical subjects. In "A Discussion Concerning the Theory of Sustentation and Expenditure of Power in Flight," F. W. Lanchester, of Birmingham, England, discusses the controversial points involved in the theory of skin friction and the "direct" resistance to the motion of solid bodies through the air. He takes exception to the customary application to the principles of dynamical similarity to skin friction by pointing out that according to tests by Zahm and others the coefficient of skin friction is affected by the length of the surface but not by the width. Consequently it is improper to make the coefficient a function of the area in shear. It should be a function only of the length in the direction of the wind. The author then develops his vortex theory of sustentation (similar to Kutta's).

In "The Arrival of the Aeroplane," A. E. Berriman, chief engineer of the Daimler Co., Coventry, England, outlines the fundamental engineering principles governing the flight of aeroplanes. His treatment is of necessity highly condensed but references are appended. The general principles of resistance, sustentation, power expended, control, and stability are discussed in a manner to appeal to engineers not familiar with recent aeronautical progress.

"Recent Progress in Aviation in France," is the title of a paper presented by Prof. L. Marchis of the Faculty of Sciences of the University of Paris.

"A Review of Hydrodynamical Theory with Reference to its Application in Experimental Aerodynamics," by J. C. Hunsaker, reviews the classical theories of fluid motion and the recent contributions by Kutta, Prandtl, and other Germans. Parallel to the discussion of theory, is carried an account of the experimental work which appears to be explained by each theoretical conclusion. The object of

the paper is to show where concordance exists between the results of recent experimental research and the latest theories of fluid motion, and to show why theory may furnish the best guide for systematic experimentation. Copious reference to the literature is given.

"Aerodynamical Experiments upon a Yacht's Mainsail," read by Prof. H. A. Everett at the November meeting of American Society of Naval Architects and Marine Engineers, describes tests made in the wind tunnel of the Massachusetts Institute of Technology upon a model sail to determine the center of pressure and the direction and magnitude of the resultant force. Tests were made at various wind speeds and various angles of boom to wind. In all cases the center of pressure was found to lie near the center of gravity of the sail area, moving somewhat forward for small angles of boom to wind. The resultant force was very nearly at right angles to the boom at all angles.

In "Wing Data and Analysis for a Staggered Biplane" (*Jour. Franklin Inst.*, Dec., 1914), Dr. A. F. Zahm has outlined a logical procedure for the calculation of the strength of aeroplane wings. The method is illustrated by application to a special case and if adopted as standard drawing-office routine by all builders should materially diminish accidents due to structural weakness of wings. As aeroplanes become of great size, the problems of structural design become more and more difficult.

The general treatment of dimensional homogeneity in the forms of physical equations has been discussed by E. Buckingham (*Phys. Rev.*, iv, 345; *Jour. Am. Soc. Mech. Eng.*, June, 1915), with reference to the conduct of model experiments in such a manner that dynamical similarity in the fluid motion is preserved. The conclusions of the study apply to wind tunnel experiments with reduced models of air craft and their component parts.

A hot-wire anemometer for the precise measurement of air velocity has been developed by L. V. King whose beautiful instrument is described in the *Philosophical Magazine* for April, 1915.

A paper by Prof. G. H. Bryan on "The Rigid Dynamics of Circling Flight," delivered before the Aeronautical Society of Great Britain and published in the *Aeronautical Journal* (June, 1915) and elsewhere, develops the equations of motion of a free aeroplane turning in a circle, and after making reasonable assumptions with regard to the necessary coefficients and constants, proceeds to discuss the probable stability of the motion as affected by various arrangements of fins, surfaces, and weights. In their present form, Bryan's results cannot be immediately applied in aeroplane design and we must wait until the aerodynamical constants required have been determined experimentally.

The year 1914 in aeronautics was marked by a practical demonstration that the original Langley aeroplane was, at the time of its apparent failure (December, 1903), capable of sustained free flight, and was in control and stability a practical flying machine. The flights by Glenn L. Curtiss on Lake Keuka with the reconstructed Langley machine are described and given their true historical significance by Dr. A. F. Zahm in the Smithsonian Report for 1914 ("The First Man-Carrying Aeroplane Capable of Sustained Free Flight; Langley's Success as a Pioneer in Aviation," Publ. 2329, Washington, 1915.)

Records and Flights.—In previous reviews of aeronautics, it has been customary to devote great space to the world's records broken. In 1915 no world's records were broken, at least for publication. In the days of the rapid perfection of the aeroplane record breaking was stimulated by valuable prizes of various kinds. The professional cup hunters with freak racing machines were the natural consequences of this situation. These iron men were able to accomplish marvels of speed, altitude or endurance, but with the war the cup hunting has ceased and the aeroplane designed to meet the conditions of particular competitions is almost as useless as a cup-defending yacht in naval warfare.

Noteworthy flights have been made in the United States by Lieut. B. Q. Jones, U. S. Army, in January, 8

hours, 53 minutes; and by Lieut. W. R. Taliaferro, U. S. Army, in September, 9 hours, 48 minutes. These were American endurance records when made. In August R. V. Morris at Buffalo, in a 160 h. p. biplane, made American altitude records for pilot and two passengers, 8,024 ft.; and for pilot and three passengers, 8,105 ft. Lieut. H. ter Poorten, Netherlands Indian Army, accompanied by a passenger, ascended on Aug. 31 at San Diego, Cal., to 8,330 ft. in a 125 h. p. hydro-aeroplane of American manufacture. Lieut. R. C. Saufley, U. S. N., made an altitude record of 11,000 feet in a hydro-aeroplane on Nov. 4, at Pensacola, Fla. Lieut. B. Q. Jones, U. S. A., with two passengers made an endurance record of 7 hours, 5 minutes in May of this year.

The Curtiss marine flying trophy for the longest flight with a seaplane in 10 hours including stops was won by O. A. Brindley of California who flew 544 miles. The trophy is to be the property of the club winning three years in succession. A cash prize of $1,000 goes to each year's winner.

Advisory Committee for Aeronautics.—In accordance with the provisions of the Naval Appropriation Act of March 3, 1914, an Advisory Committee for Aeronautics has been formed to assist the War and Navy Departments in aeronautical problems (see also XII, *The Navy*). The 12 members appointed by the President are: Brig.-Gen. George P. Scriven, chairman, Chief Signal Officer, War Department; Naval Constr. Holden C. Richardson, U. S. N., Navy Department; Prof. Joseph S. Ames, Johns Hopkins University; Capt. Mark L. Bristol, U. S. N., director of naval aeronautics, Navy Department; Prof. William F. Durand, Leland Stanford University; Prof. John F. Hayford, Northwestern University; Prof. Charles F. Marvin, chief of the U. S. Weather Bureau; Byron R. Newton, Assistant Secretary of the Treasury; Prof. Michael I. Pupin, Columbia University; Lieut.-Col. Samuel Reber, U. S. A., Signal Office, War Department; Dr. S. W. Stratton, chief of the Bureau of Standards; Dr. Charles D. Walcott, director of the Smithsonian Institution. The executive committee is composed of Dr. Walcott, chairman; Naval Constructor Richardson, secretary, and Professor Ames, Captain Bristol, Professor Marvin, Professor Pupin, Colonel Reber, and Dr. Stratton.

The Committee has contracted for reports upon matters of immediate interest. These reports will cover the subjects of the behavior of aeroplanes in gusts, by the Massachusetts Institute of Technology; the possibilities in design of mufflers, by Cornell University; the aeronautical qualities of different fabrics used in the construction of aeroplanes and dirigibles, by the U. S. Rubber Co.; the present status of internal-combustion engine design with relation to aeronautics, and the means of improving the performance of motors, by Columbia University; the question of safe and reliable means of making the terminal connections of the aeroplane truss wires, by John A. Roebling's Sons Co. Owing to the limited funds at the disposal of the Committee, many other important subjects of similar nature cannot be investigated until a later date, but in the course of making the contracts referred to, it was found that a number of other institutions are already engaged on important investigations and are ready to coöperate with the Committee. A subcommittee, of which Professor Marvin is chairman, has been assigned the investigation of the problem of the atmosphere in relation to aeronautics, which it is believed will result in important discoveries and information with relation to atmospheric disturbances.

American Society of Aeronautical Engineers.—Simultaneously with the organization of a "Naval Advisory Board" by Secretary of the Navy Daniels, there was formed, primarily for the purpose of nominating two men for this Board, the American Society of Aeronautical Engineers. This Society is expected to include aeronautical engineers, inventors, manufacturers, etc., employed in the rapidly growing aeronautical industry. The organizing officers are as follows: president, Henry A. Wise Wood; vice-presidents, Orville Wright, Glenn H. Curtiss, W. Startling Burgess, Elmer A. Sperry, Peter Cooper Hewitt, and

John Hays Hammond, Jr.; secretary, Lawrence B. Sperry. The Society appointed to serve on the Naval Advisory Board Mr. Sperry, the inventor of the gyroscopic compass and gyroscopic stabilizer for aeroplanes, and Mr. Wood, who is vice-president of the Aero Club of America. Mr. Wood, however, resigned on Dec. 22, being out of sympathy with the naval programme advocated by the Administration.

NAVAL ARCHITECTURE AND MARINE ENGINEERING

DANIEL H. COX

Shipbuilding.—Notwithstanding unfavorable legislation, the shipyards in the United States are, for the first time in many years, practically operating at their maximum capacity; and the Lake yards are now commencing to fill their slips with new tonnage, much of which is for use on salt water, although a certain portion is for Lake traffic. At the end of the year it appears that prospective shipowners will soon have to be satisfied for the most part with delivery in 1917, as very shortly all the yards, both coast and lake, will be unable to take any further orders for delivery in 1916.

From a careful investigation of the contracts actually placed for new vessels in this country, it appears that during the 12 months ending July 1, 1916, at least 600,000 tons of seagoing vessels, about one-half of the existing tonnage of this character, will have been constructed in American ship yards. This is certainly a most encouraging outlook. An investigation of the types of vessels building shows that while some new passenger ships have been ordered, also a certain number of freight vessels and vessels for specific purposes, the amount of new tonnage ordered for the transportation of oil in bulk far exceeds that for all other purposes. The demand for oil tankers is caused by the increase in consumption of fuel oil generally, but also largely for supplying the need of the Navy and the steadily increasing number of vessels of all types using oil as fuel.

The main cause of the activity in shipbuilding in this country is, of course, the European War. The demand for tonnage to replace that either eliminated or withdrawn from service, and the stupendous shipment of war material and general merchandise from this country have made shipowning, on the Atlantic coast at least, a profitable business, even under the serious handicap of existing legislation. The European War presented to this country a magnificent opportunity to regain its place among the maritime nations, and it is fair to say that if capital were not so chary of subjecting its investments to such attacks as have recently been made upon shipowners and operators in the guise of benevolent regulation, much more would have already been accomplished toward rebuilding our merchant marine (see also XX, *The Merchant Marine*). One particularly interesting feature in the shipbuilding situation is that notwithstanding the high cost of vessel construction in this country, some of the vessels now being built here are being financed by foreign capital, and for foreign owners. The reason is, of course, that the foreign yards are either occupied with government work or are inoperative at the present time.

Engineering Developments.—An examination of the developments in marine engineering shows many interesting features. The use of fuel oil in place of coal is becoming more and more general. The geared turbine which has been used abroad successfully for many classes of vessels, combining as it does the efficiency of the turbine of high speed with the selective power of revolutions of propeller, is now being used in much of our recent construction. The Navy has for some time realized the great resultant economy of this type of motive power, and in 1915 we find it in use in yacht construction, in cargo vessels, and in two large passenger and freight vessels just contracted for, this power will be installed. Electrical drive is also being further developed and the Navy Department has shown its faith in this direction

by specifying that one of the battleships now under construction shall be electrically driven. (See also XII, *The Navy.*)

The Diesel engine continues to be used abroad, but in this country, although largely used for submarines, its general use has not been great as yet. The semi-Diesel or hot-bulb engine, however, on account of its simpler and cheaper construction and operation, as compared with the regular Diesel, securing as it does a fuel economy far superior to that possible with steam, is coming rapidly to the front, particularly for installations not requiring large horse power, units of over 600 h. p. not as yet having been successfully developed in practice.

PHYSICAL PROPERTIES OF METALS AND ALLOYS

JAMES S. MACGREGOR

Aluminium Die Castings.—Before the war 85 per cent. of the die casting produced in the United States were made from alloys of zinc, tin and copper. The price of these materials has become so great that the properties of aluminium are being studied with a view to adopting this metal and its alloys to die-casting use. Charles Pack, in a paper before the American Institute of Metals, September meeting, refers to experiments indicating that aluminium-zinc alloys disintegrate with age and should be guarded against. Aluminium-copper, however, when properly proportioned, lends itself well to die casting and the disadvantages peculiar to aluminium-zinc are overcome.

Elastic Limit, Proportional Limit, Yield Point.—These physical constants have been the subject of considerable discussion during the last year, and the American Society for Testing Materials has recently adopted standard definitions, substantially as follows:

Elastic Limit: The least unit load which will produce a permanent set. Determined by instrument reading to 0.0001 in.

Proportional Limit: The unit load at which the ratio between intensity of stress and rate of strain ceases to be constant. Determined by use of instrument reading to 0.0001 in.

Yield Point: The unit load at which a distinctly visible increase occurs in the distance between gauge marks on a test specimen.

These definitions are somewhat at variance with definitions of European countries which also differ among themselves.

In a paper entitled "Some Suggestions Regarding the Determination of the Properties of Steel," A. N. Mitinsky of Petrograd (edited by Lawford H. Fay, *Trans. Am. Inst. Min. Eng.*, 1915) discusses the proportionality limit in considerable detail; great weight is attached to the determination of this physical constant. The author's principal conclusions are: (1) that this limit is the proper basis for use in engineering design; (2) its relation to the yield point is independent; (3) that its value should be high for metals subjected to shock; (4) that this limit can and should be determined in engineering inspection of materials. The written discussion of this paper by American authors presents the American point of view. The paper and discussions bring together a mass of valuable information for the use of those interested in the subject.

Fatigue of Copper Alloys.—The question of so-called fatigue of copper alloys and means of overcoming it is the subject of a paper by Ernst Jonson (*Trans. Am. Soc. for Testing Materials*, 1915). The author tested alloys of bronze, naval brass, Muntz and gun metal. Failure of all of the above occurred at comparatively low unit loads when test specimens were subjected to the action of corrosive agents coincident with prolonged stress. When corrosive agents were excluded higher resistances resulted. The general conclusion drawn from the investigation were: that high working stresses alone do not injure copper alloys but when corrosive agents are present and the material at the same time is subjected to a prolonged stress equal to or greater than 20,000 lb. per sq. in., cracking will result. It would seem, therefore, that working stresses should be

based upon the above load divided by the desired safety factor.

Hardness Tests.—Robert R. Abbott (*ibid.*) reports the results of some 4,000 Brinell, scleroscope, and tension tests and by a correlation of results attempts to show the relation between the two methods of determining hardness as well as the relation between the Brinell hardness number and the ultimate resistance of steel.

Internal Stresses in Quenched Steels.—Internal stresses in steels have been known to vary materially with the quenching medium used, but practically no data giving quantitative values have been available. H. V. Wille (*ibid.*) by an ingenious method, using cylinders of steel 9½ in. in diameter, derives among other values, the following values for the fibre stress developed by different quenching media, in pounds per square inch: water, 45,000; light oil, 35,000; heavy oil, 24,000; fish oil, 30,000.

"The Occurrence and Influence of Nitrogen in Iron and Steel" is the title of a paper reporting the researches of Prof. N. Tschischewski (*Proc. Iron and Steel Inst.*, 1915). The paper as well as its subsequent discussion on the effects of this element is of extreme interest to those interested in iron and steel.

Alloy Steels.—An instructive and interesting paper on the subject of alloy steels read before the International Engineering Congress in San Francisco by George L. Norris discusses the effect upon the physical properties of the addition of the elements manganese, silicon, nickel, chromium, tungsten and vanadium to carbon steels.

Prof. C. A. Edwards and H. Kikkawa of Manchester University have described their researches on "The Effect of Chromium and Tungsten upon the Hardening and Tempering of High-Speed Tool Steels" (*Proc. Iron and Steel Inst.*, 1915).

Radiography of Metals.—Wheeler P. Davey presented a paper on the radiography of metals at the joint September meeting of the American Institute of Mining Engineers and the American Chemical Society. The technique and interpretation of phenomena revealed by this method are discussed. With a strength of the X-ray just insufficient to penetrate a given thickness of normal metal, the presence of any flaws will be shown by penetration of the X-ray. The author states that valuable information relative to the presence of blow holes, slag inclusions, and porous spots are shown up which could not be determined by any method other than cutting into the specimen. Experiments showed that air inclusions 0.021 in. thick could be detected in 1¼ in. steel and in ⅝ in. steel an air inclusion as small as 0.007 in. could be detected. (*Bull. Am. Inst. Min. Eng.*, 1915, p. 1515; *Trans. Am. Electro-Chem. Soc.*, xxviii.)

Spelter.—Gilbert Rigg reported the results of experiments on "The Influence of the Impurities of Spelter on the Cracking of Slush Castings" at the 1915 meeting of the American Institute of Metals. The conclusions were that cadmium in spelter as an impurity produces a hot-short condition and unfits the metal for casting where power to resist the internal stress of cooling is required. Lead as an impurity produces a progressively bad effect upon the alloy.

Fusible Boiler Plugs.—G. K. Burgess of the Bureau of Standards submitted a paper on the use of tin for fusible boiler plugs at the same meeting. He called attention to the fact that tin oxide has a melting point as high as 1,600° F. and that this oxide may form in such a way as to prevent the blowing out of the unoxidized tin when the latter fuses. A small percentage of zinc as an impurity which apparently enhances oxidation might thus cause a plug to become unreliable as a safety device.

XXII. MATHEMATICS AND ASTRONOMY

MATHEMATICS

E. B. WILSON

Collegiate Mathematics. — The American Mathematical Society has now about 700 members. It publishes its *Bulletin* (edited by Prof. F. N. Cole, Columbia University, New York), which contains reports of the meetings of the Society, book reviews, personal notes, lists of new books, and short original articles; the volume runs to about 550 pages per annum. It publishes also its *Transactions*, a journal devoted to research of high caliber, and of some 500 quarto pages per annum. The work of the Society is therefore for advanced mathematicians; although a large number of the members are probably not themselves prosecuting advanced researches, but are occupied almost entirely with teaching and executive work, the Society does not pretend to do much for elementary collegiate mathematics and its teachers, except indirectly. The *American Mathematical Monthly* (edited by Prof. H. E. Slaught, University of Chicago) caters precisely to this large class of persons interested in collegiate mathematics. The *Monthly* contains book reviews, personal notes, problems proposed for solution and their solutions, discussions, historical articles, brief elementary researches, and runs to some 200 pages per annum. During 1915 a proposition was made to the American Mathematical Society to take over the *Monthly* and to widen the Society's activities by taking an active and effective interest in the collegiate field. The Council of the Society, which directs its affairs, felt that this step would be inadvisable. There is therefore under way the organization of another national mathematical society whose field will be collegiate mathematics.

Mathematical Aeronautics.—During the past few years a new application of mathematics has arisen in the theory of the aeroplane. The aeroplane, except for its motive and guiding apparatus, is essentially a rigid body which in flight moves through the fluid air, and the forces which sustain the machine and control its motion against the attraction of gravity are the pressures of the disturbed air upon the machine. The problem is, therefore, fundamentally one in hydromechanics. Unfortunately the theory of fluid motion is very complicated and is not yet developed to the point where the pressures upon the aeroplane, and their points of application, can be accurately determined. Even when, for simplicity, it is assumed that the wings, tail, fins, etc., of the machine are plane surfaces, the theoretical deductions from hydromechanics are not sufficiently near to the results derived from experiment to furnish an entirely safe foundation for a theory of flight. Nevertheless, Prof. G. H. Bryan (Bangor, Wales), one of the first theorists in the field, about five years ago obtained important results in his *Stability in Aviation* (Macmillans), based on the assumption of flat surfaces. At that time he treated problems connected with steady flight in a horizontal line, and has during 1915 written an important monograph upon the problem of circling flight, using the same assumptions.

In the meantime, the National Physical Laboratory at Teddington, England, and other laboratories, such as that at the Massachusetts Institute of Technology, which deal with problems of aeronautical engineering, have proceeded in a different way.

The forces, which act upon the machine are determined directly by experiments upon small models placed in a wind tunnel and by calculations which scale up the results from the model to the full-sized machine. With the forces thus determined, the hydromechanical part of the problem has been solved by experiment and the theory of the motion of the machine reduces to the theory of a rigid body moving under these forces. Even as thus reduced the problem remains sufficiently mathematical (*cf.* the *Technical Reports of the Advisory Committee for Aeronautics*, Darling & Son, London). Mathematical science has arrived to about the point where the motion of the aeroplane in a straight line or in a curve which is nearly a straight line can be followed in still or in gusty air and the safety of the machine under normal conditions of flight may therefore be determined from the design.

Sir George Greenhill has prepared for the Advisory Committee a *Report on Gyroscopic Theory* (Darling & Son, London), containing the various methods of theoretically explaining the motion of a spinning body, a subject likely in the future to have important utility in its bearing on the steering and stability of a flying machine.

Personal Notes.—Prof. H. S. White (Vassar) was elected in 1915 to the National Academy of Sciences (Washington), section of mathematics. At the end of 1914, Prof. E. B. Van Vleck (Wisconsin) finished his biennial term as president of the American Mathematical Society, and was succeeded by Prof. E. W. Brown (Yale). Prof. Brown has been awarded the gold medal of the Royal Society (London) for his researches in mathematical astronomy. Prof. R. E. Moritz (University of Washington) has published his *Memorabilia Mathematica or the Philomath's Quotation Book* (Macmillans), which contains a large variety of sayings on various mathematical topics by many eminent students. Prof. D. E. Smith (Columbia) has brought out a new edition in two large volumes, annotated, of Augustus De Morgan's *Budget of Paradoxes* (Open Court Publishing Co.), a curious and interesting work by a great English mathematician of the middle of the last century. Dr. H. Bateman (Johns Hopkins) whose work was referred to in the last issue of the YEAR BOOK (p. 583) has published an account of his theories in a book entitled *The Mathematical Analysis of Electrical and Optical Wave Motion on the Basis of Maxwell's Equations* (Cambridge, England). Prof. Pierpont (Yale) has published (Ginn) an elaborate work on the *Theory of Functions* (complex variable); he had previously printed a two-volume work on the functions of real variables. During the spring of 1915 Prof. C. J. de la Vallée-Poussin (Louvain, Belgium), an exile from his country, delivered a course of lectures at Harvard setting forth some of his recent important investigations.

Necrology.—The country has lost a number of mathematicians who had become eminent as teachers or executives through long periods at their respective institutions. J. H. Van Amringe of Columbia, for a long time head of the mathematical department and dean, founder and first president of the American Mathematical Society, died on Sept. 10 at the age of 80. A. W. Phillips, author of a number of texts, formerly head of his department and dean of the Graduate School at Yale, died on Jan. 20, aged 70. S. W. Shattuck (Illinois), F. A. Sherman (Dartmouth) and J. J. Hardy (Lafayette) are other senior members of the profession who have died. A serious international loss was Prof. G. B. Guccia (Palermo, Italy), who founded 30 years ago the Circolo Matematico di Palermo and with untiring energy and considerable personal financial support developed the Circolo into the foremost place as an international mathematical society counting among its members a large number of American mathematicians. The official organ of the Circolo, the *Rendiconti*, has acquired a position as one of the leading international mathematical periodicals; it has printed a number of researches by Americans, and in 1915 contained (among other American papers) a long contribution by Prof. G. D. Birkhoff (Harvard) on the "Problem of Three Bodies."

ASTRONOMY

R. S. Dugan

Instruments and Observation.—Consistent performance of large reflectors is to be expected only when temperature deformation of the mirror is carefully guarded against. Refractors, on the other hand, can ordinarily be used over a large range of temperature without scruple. As the desire for accuracy becomes more insistent, precautions multiply. Schlesinger has found it worth while to install an electric fan to draw out the air from behind the 30-in. objective of the Thaw telescope at Allegheny, thereby getting rid of troublesome changes in spherical aberration.

Michelson has finished the ruling of a 10-in. grating having about 622 lines to the millimetre, which gives superb resolution in the eighth-order spectrum.

In measuring distances between star images on a photographic plate, a troublesome error enters, depending on the size of the image or brightness of the star. Kapteyn suggests a device by which this source of systematic error may be eliminated. A photograph taken a little inside the focus of the telescope will show enlarged star images of nearly equal size but of various densities. This plate is developed and used as a screen through which to expose the main plate at the focus, the cone of light from a star going through its intrafocal image before striking the main plate. By a suitable length of exposure the images of all stars, bright or faint, will be of nearly equal size (*Ap. J.*,[1] xli, 77).

It is Evershed's opinion that a small island with a large stretch of ocean about it would be a good place for an observatory, as an almost complete absence of convection currents in the atmosphere, and consequent good seeing, is to be expected in such a location. Pickering reports wonderfully fine observing conditions on the island of Jamaica.

The Earth.—The discussion of the observations obtained during the carrying out of the elaborate programme for determining by the aid of wireless signals the difference in longitude between Washington and Paris (*A. Y. B.*, 1914, p. 608) gave the value $5^h\ 17^m\ 36^s.658 \pm 0^s.0029$, which is in good agreement with the older value obtained with the aid of the cable. The signals were found to travel at the rate of 175,000 ± 16,000 miles per second.

The war, contrary to expectation, did not interfere with latitude observations during 1914 at the six international stations maintained for the study of small variations in latitude caused by the wandering of the terrestrial poles. The amplitude of the motion of the pole, which reached a very small value in 1913, increased throughout 1914 (*A. N.*, 4802).

The Cookson floating zenith-telescope at Greenwich has now been in use for three years. The preliminary value found for the constant of aberration—the angle through which the line of sight to a star is displaced by the orbital motion of the earth at right angles to the direction of the star—is $20''.467 \pm 0''.006$, in complete agreement with the value found from the solar parallax and the velocity of the earth deduced therefrom.

The Moon.—The positions of the moon are now being determined with high accuracy photographically. Since January, 1911, photographs of the moon have been taken at Harvard at short intervals. The plate is screened from the moon's light during the relative long time required for the exposure on the neighboring stars, whose distances from the moon are measured. In *Harvard Annals* (lxxvi, No. 7) Russell and Miss Fowler give the results from the first 204 plates

[1] References to periodicals are given under the following abbreviations:

A. J., *Astronomical Journal*, Albany.
A. N., *Astronomische Nachrichten*, Kiel.
Ap. J., *Astrophysical Journal*, Chicago.
C. R., *Comptes Rendus de l'Académie des Sciences*, Paris.
M. N., *Monthly Notices of the Royal Astronomical Society*, London.
Obs., *Observatory*, London.

The Roman numerals denote volumes; the Arabic numerals pages, except in references to *Astronomische Nachrichten* and the *Observatory*, where they denote individual numbers of the periodical.

measured at Princeton. The results are compared with the Greenwich measures, with which they are in good agreement. The photographic positions are probably more uniformly good, however, as measures are made all along the visible limb and are discussed with due regard to the depressions and elevations. Brown has published the values of the elements of the moon's orbit adopted for use in the new lunar tables, on which he has long been working, with a brief summary of the reasons for each choice. The value of 1/294 for the earth's ellipticity has been adopted in order to reconcile the theoretical and observed values of the mean motion of perigee and node—a value which also reconciles the best determination of the lunar parallax with its gravitational value (*M. N.*, lxxv, 508); compare, however, de Sitter (*Obs.*, 490), who considers 1/296 the most reliable value. Brown adopts the theoretical value of the secular acceleration of the mean longitude, inserting a single empirical term—the large one with a period of some two and a half centuries. In the accurate prediction of eclipses, additional empirical terms may in each case be deduced from observations of the few previous years. He will give a few short additional tables for the investigation of ancient eclipses.

Brown has been unable to explain satisfactorily certain outstanding irregularities in the moon's orbital motion. It is conceivable that the cause lies in irregularities in the earth's rotation, which is used as a measure of time. Such a change in the rate of rotation of the earth should become apparent as an error of position of any body moving fast enough to show the effect (*M. N.*, lxxv, 211). An investigation by Glauert of the available observations of Mercury, Venus, and the sun culminates in the conclusion that the errors in longitude of the moon and these three bodies may be accounted for by a rather irregular variation in the rate of rotation of the earth amounting to something like 0s.01 in the third of a century covered by the observations (*M. N.*, lxxv, 489).

The Sun.—From eclipse plates taken on Aug. 21, 1914, Spanish and French astronomers found a new and strong line in the red at about λ 6376. The usual green line at λ 5303.7 was absent. Cortie finds that certain streamers of the solar corona seen at the August eclipse had their apex or radiant area in the region of the large sun-spot disturbance which persisted for several months. Four other such connections between coronal streamers and long-continued sun-spot activity have been previously shown (*M. N.*, lxxv, 496).

Some years ago Hale discovered that sun-spots are magnetic vortices. A quarter-wave plate and a Nicol prism mounted over the slit of the spectroscope show the direction of rotation of the electrons in the spot vortex. Later, evidence of the existence of bipolar spot groups was found. Such pairs of spots lie on a line usually making a small angle with the solar equator. Sometimes one spot is replaced by a group of small spots or only by flocculi, but the eastern and western extremities of the affected area show rotation in opposite directions. The direction of rotation of preceding spots near the equator in the northern hemisphere is counter-clockwise, as it is in the terrestrial tornado, while in the southern hemisphere the rotation is clockwise. In higher latitudes the directions of rotation are reversed. Hale has devised several ingenious laboratory experiments to show that at a certain speed of rotation the lower end of a columnar vortex rises to the surface and a bipolar, semicircular ring vortex is formed, similar to a smoke ring, which has a motion of translation at right angles to its plane, in the direction corresponding with that of the inner edge. This may prove to be an explanation of the observed fact that high-latitude spots in either hemisphere show a slight general tendency to move away from the equator, those in low latitudes to move toward it.

Adams and Miss Burwell, in their paper describing their success in photographing without an eclipse the spectrum of the reversing layer and chromosphere of the sun with the 60-ft. tower telescope at Mt. Wilson, find that they have been able to photograph the chromosphere to a lower

level than that reached by eclipse plates, and that the accuracy in determining wave-lengths is about two and one-half times as great as that attained by Mitchell in his measurement of eclipse photographs. One of the general conclusions drawn from the data is that the lines of elements of high atomic weight are relatively stronger at the lower levels in the sun's atmosphere (*Ap. J.*, xli, 116).

Planets and Satellites.—The mean distance of the ninth satellite of Jupiter, discovered by Nicholson (*A. Y. B.*, 1914, p. 586), is nearly one-fifth that of the earth from the sun. No other discovered satellite in the solar system is at so great a distance from its primary. At the time of discovery, the orbit was inclined about 157° to the earth's orbit, and had an eccentricity of 0.11. The satellite requires two years and two months to make one revolution about Jupiter. These elements are subject to considerable change through the attraction of the sun.

Comets.—Comet 1915a was discovered by Mellish on Feb. 10 when it was of about the 10th magnitude. It was nearest the earth in June, when it brightened to the third magnitude with a tail six to ten degrees long and was easily visible to the naked eye in the southern hemisphere. Thiele found on May 5 that the nucleus had separated into two parts of unequal brightness. Barnard found two subsidiary nuclei on May 12, one of them conspicuous and at a distance of 28″ from the main nucleus, the other faint and at an intermediate point in the same line.

Winnecke's periodic comet was discovered by Thiele on its return this year as 1915b. It was very faint, of the 16th magnitude. 1915c was Tempel's periodic comet, discovered on May 16 by Delavan. Mellish discovered another telescopic comet, 1915d, during September. 1915e, a telescopic comet, was discovered Dec. 2 by Taylor at the Cape of Good Hope.

Stars and Nebulae.—A new series of plates of the nebulae photographed by Keeler and Perrine is being taken with the Crossley reflector at the Lick Observatory. One-fourth of the plates have been measured and thus far no evidence has been found of internal movement, rotatory or otherwise. The largest proper motions found are 0″.056 and 0″.054 per year of two planetary nebulae. Most of the proper motions found may well be ascribed to errors of measurement. These nebulae, none of which are spirals, must be enormously distant. The spectrograph, with which Wolf and Slipher discovered rotatory motion in certain spiral nebulae (*A. Y. B.*, 1914, p. 587), measures motion in the line of sight independently of distance.

Eleven of the 19 gaseous nebulae in the Greater Magellanic Cloud are found (at the Lick South American station) to be receding at velocities of 237 to 287 km. per sec.; also the only known bright-line nebula in the Smaller Cloud is receding at the velocity of 160 km. per sec. There are no other gaseous nebulae in the neighborhood of the Clouds. The agreement of the velocities of the nebulae in the Greater Cloud indicate a close relationship to each other, and perhaps to the Cloud (*Proc. Nat'l Acad.*, i, 496).

Aitken has finished his search, shared for several years by Hussey, for double stars among the stars to the ninth magnitude from the North Pole to 18° south declination. He concludes that at least one star in eighteen is a close double star visible in the 36-inch telescope; that the percentage is greatest in the Milky Way; and that relatively small orbits are in the majority.

Most of our knowledge of the proper motions of stars—their change in apparent position—has been accumulated by the comparison of star catalogues of widely different epochs. The comparison of photographic plates is of late giving results in this line. Sometimes a glance at two photographs taken some years apart will show that a star has moved among its fellows. Wolf announces (*A. N.*, 4775) a 13th magnitude star with the large, for so faint a star, annual proper motion of 1″.1 in right ascension, and practically none in declination. This motion carried it directly across the line of sight to a 15th magnitude star, causing an unobserved occultation at some time between 1894, when the two stars are shown

well apart, and 1914, when the fainter star is seen on the photograph just emerging from the proper-motion star.

An extensive programme has been undertaken at Greenwich of determining the parallax of stars down to the ninth magnitude with proper motion of more than 20″ per century. Forty new parallaxes have just been published. The mean parallax of 22 of these, between proper motion 20″ and 30″, is 0″.017. The probable error averages slightly less than 0″.01 (*M. N.*, lxxv, 592).

The first attempts to determine stellar parallaxes with the Mt. Wilson 6-ft. reflector have met with marked success. The Cassegrain combination, with an equivalent focal length of 80 ft., gives a one-fourth larger scale of plate than does the Yerkes 40-in. With this instrument it is intended to extend to stars of smaller proper motion but of the same spectral types the list, recently published by Adams and Kohlscheutter, of the absolute motions and absolute magnitudes of 100 stars with known parallaxes. Thus far five parallaxes have been completed. The mean probable error is not quite 0″.006, a distinct gain. The mean parallax of the five stars is 0″.020, while according to Kapteyn's table, based on statistical studies, it is, for this spectral type, magnitude and proper motion, 0″.014 (*Proc. Nat'l Acad.*, i, 187).

Photometry and Radiometry.—A number of very important photometric studies have appeared during the year. The details of the work of Guthnick and Prager with the photo-electric cell are presented in the first publication of the Babelsberg Observatory. In accuracy and applicability the method is said to have come up to all hopes. One difficulty experienced in their study of variable stars is in finding comparison stars which are themselves not subject to variations not too small to be detected with the new apparatus. The velocity of the electrometer deflection has been found proportional to the brightness of the star, a fact which makes it possible to observe, as a measure of the light, the length of time between the transits of the electrometer wire across two certain scale divisions. They are convinced of the proportionality of the photo-current to light-intensity within the range of 2½ magnitudes measured. By careful insulation and by keeping all surfaces dry they largely eliminate the "dark effect." The atmospheric extinction, depending greatly upon spectral type, is of course troublesome. The small variations of Cephei and other stars through four or five hundredths of a magnitude are well determined. Albrecht's conclusion that the light maxima of the Cepheids occur near passage of the descending node is not borne out. Provisionally, the probable error of one comparison is given as ±0.0060 magnitude.

The selenium photometer has definitely decided the question of the variability of δ Orionis. Stebbins finds it an eclipsing variable with a range of 0.15 magnitude, with a period in agreement with spectroscopic results. He finds evidence of increased brightness at periastron and of the brighter state of the advancing sides of the stars.

The details of the work of Coblentz with thermo-couples attached to the Crossley reflector are at hand (Lick Bull. No. 266). The thermo-element differs from the selenium and photo-electric cells in that it absorbs equally all the radiations of all frequencies falling upon it. Further, the response to the stimulus is proportional to the energy falling upon it. The radiation sensitivity was such that, when used on the 3-ft. reflector, a deflection of one millimetre would have resulted, had the apparatus been exposed to a candle at a distance of 53 miles with no intervening atmosphere. In order, however, to do much successful work on stellar spectral energy curves, a sensitivity one hundred times as great is desirable, a sensitivity which is considered possible of attainment by using a 7-ft. reflector and by increasing the sensitivity of thermo-couple and galvanometer. Measurements could be made on stars as faint as the 6.7th magnitude. It was found that red stars emit from two to three times as much total radiation as blue stars of the same photometric brightness, but that a much larger portion of the radiation of the

red stars lies outside the region to which the eye is sensitive. Assuming various estimates of the total light of the stars in terms of Polaris, and of the spectral distribution of the stars, he finds that if the total radiation from all the stars which falls upon one square centimeter of the earth's surface were absorbed and conserved, it would require from 100 to 200 years to raise the temperature of a gram of water one degree C.

Photographic photometry now rests on fairly secure foundations. Many reference stars over a wide range of brightness are now available. In the *Astrophysical Journal* (xli, 206, 259) appear summaries of the elaborate investigations carried on by Seares at Mt. Wilson since 1910. He has determined the photographic magnitudes of 617 stars and the photovisual magnitudes of 339 stars near the North Pole. The former range from the 2.5th to the 20th, the latter from the 2d to the 17th magnitude. The agreement of the Mt. Wilson and the Harvard scales was already close from the 10th to the 15th magnitude. This range of agreement has been extended in both directions by correcting the Harvard results for color and distance from the center, and by removing the corrections applied for difference varying steadily with the order of exposure. Seares believes that the plate comes to its final state of equilibrium soon after the beginning of the first exposure.

The Cepheid variable RR Lyrae has been investigated photographically by Martin and Plummer (*M. N.*, lxxv, 7). They believe that two minor sinuosities in the light curve are established by the observations. These secondary maxima are found to occur at times when Kiess (from a comparatively small amount of data) found that the star's light becomes bluer, and an attempt is made to explain the curve by radial pulsations in the atmosphere of the star. A photographic determination of the difference in brightness of the components of many double stars has been carried out by Hertzsprung (*A. N.*, 4783). When combined with the knowledge of the difference in visual magnitude, these data give the difference in color of the components.

A great many visual observations of variable stars have been made during the year. Shapley has published a voluminous and very valuable discussion of the light-curves of all eclipsing variables for which reliable data were available (Princeton Contribution No. 3). The number of systems is 90 and elements have been determined for them with much care on the hypothesis of uniform brightness of disk as well as of darkening toward the limb. Many interesting conclusions are drawn and suggestions made for future observation.

The observations of RT Persei and Z Draconis by Dugan (Princeton Contributions Nos. 1 and 2), supplemented by recent observations by him and photographic observations at Harvard running back many years, show distinctly two inequalities in the period of each (*M. N.*, lxxv, 692, 702). The observations of the shallow secondary minima are less numerous than those of the primary minimum but furnish considerable support to the author's conclusion that the line of apsides of each system revolves in the shorter of the two inequalities. This is about the rate to be expected from the measured ellipticity of the stars. From the discussion of observations of the eclipsing system RV Ophiuchi, not yet published in detail, Dugan finds an asymmetry in the light-curve, similar to one observed in the curve of RT Persei, which he considers should be attributed to the greater brilliance of the advancing sides of the stars (*Proc. Am. Phil. Soc.*, liv, 52).

Spectroscopy.—Observers at Lick have found that the nuclei of planetary nebulae show the characteristic lines of Wolf-Rayet stars and that, on the other hand, the gas envelopes surrounding certain Wolf-Rayet stars show the nebular lines. In the envelope of one star there are no helium lines, while this element is well represented in the star itself. Wright concludes that the envelope is condensing into the star, helium being the first to settle.

When the observed velocities of a spectroscopic binary are of about the size of accidental errors, Schlesinger finds that the shape of the frequency curve of observed velocities often tells

him whether orbital motion really exists and the character of the orbit. The method has, of course, a wide application to all periodic phenomena (*Ap. J.*, xli, 162).

Frost has verified with the spectrograph the interferometer observations of Fabry and his associates (*A. Y. B.*, 1914, p. 587) which showed marked differences in the radial velocities of neighboring portions of the Orion Nebula. Within 2′ of the Trapezium Frost finds velocities ranging from 6 to 17 km. per sec.

General Studies.—Turner has made counts in various zones of the Astrographic Catalogue and finds that the ratio of faint to bright stars varies with right ascension. He attributes a defect of faint stars to the presence of obscuring matter and from his counts is able to draw an approximate chart of the obscured patches in the sky (*M. N.*, lxxv, 57, 143, 148, 465, 601).

Lindemann adopts the theory that novae are produced by collisions with dark stars, and finds that there are about 4,000 times as many dark stars as there are bright ones, and that the average life of a star, *i. e.*, the period between collisions, is of the order of 10^{13} years (*M. N.*, lxxv, 178).

From an examination of the Franklin-Adams charts, Melotte finds that the great majority of the star clusters are distributed over a zone within $\pm 30°$ of the galactic plane, and that only a few, mostly globular, are to be found outside these limits. Further, it is to be noted that there is a distinct tendency for the globular clusters to crowd together about longitude 325°, and that opposite this point the clusters appear spread out over a somewhat wider range in latitude and include some of the most extended clusters (*Mem. R. A. S.*, lx, Pt. v).

Several investigations of the color of stars have been published during the year. They all bear evidence to the greater redness of faint stars. Hertzsprung finds that with each photographic magnitude the effective wave-length increases about 30 A. Proceeding, however, from the absolutely brightest stars to the fainter ones, a new element evidently comes into action at about absolute magnitude ± 3 which stops the further increase in effective wave-length with decreasing absolute brightness (*Ap. J.*, xlii, 97, 111).

Some years ago Campbell announced his discovery that the radial velocities of stars are a function of the spectral type, the solar-type stars moving more rapidly than the helium stars. Naturally this refers only to stars bright enough to be observed with the spectrograph. In making this selection a relatively large number of near stars of types F to M have been observed. Adams and Kapteyn find that for all spectral types the average radial velocities show a regular increase with the proper motions, and that the very distant stars of types F to M show a low average velocity. The observed relation between spectral type and velocity may, then, be largely one between distance and velocity, the stars near the sun moving more rapidly than the more distant ones. There are also some indications, found independently by several writers, of a change in radial velocity with absolute luminosity; the brighter stars moving more slowly than the fainter ones. The average velocity of stars of very low luminosity is very great. If these very faint stars are stars of small mass, we are led to the conclusion that the motion of stars is a function of mass (*Ap. J.*, *M. N.*).

The average radial velocity of seven irregular, extended nebulae observed at Lick is 10 km. per sec., about the same as the velocity of the B-type stars. Of 73 planetary and regular formed nebulae, the 39 large ones are found to have an average velocity three times; the 34 of diameter less than 5″ five times, as great. The old hypothesis that helium stars have in general evolved from planetary nebulae appears, therefore, hardly tenable. Campbell suggests that the planetary nebulae may result from stellar collisions, the transformation being more far-reaching than in the case of novae. These 73 nebulae are apparently a part of our stellar system, as they show a marked preference of motion in directions making but small angles with Kapteyn's two stream motions (*Proc. Nat'l Acad.*, i, 496).

XXIII. GEOLOGY, METEOROLOGY, AND GEOGRAPHY

GEOLOGY

DYNAMICAL AND STRUCTURAL GEOLOGY

J. B. Woodworth

Unconformities.—The doctrine of recurrent diastrophism involving changes of level of land in relation to the sea, with a resulting alternation of episodes of erosion and deposition, seeks to find in widespread unconformities a means of establishing chronological divisions in the greater stages of deposition in the geological past. Several factors in the progress of geology have tended to give increased importance to the recognition of such unconformities. Not among the least of these factors is the better understanding of the nature of such surfaces brought about by the diagnosis of the present form of the lands accomplished by the new geology or geomorphology, the strictly physical side of physiography. Furthermore, geologists engaged in the Pre-Cambrian non-fossiliferous rocks have, in common with Van Hise, dwelt upon the probably broad extent of certain unconformities and insisted upon their value as structural divisions in the sequence of terranes. Lastly, the teachings of Suess have begun to evoke discussion concerning the geological history of the level of the ocean's surface. Among recent contributions to the subject of unconformities, that of L. W. Stephenson, "The Cretaceous-Eocene Contact in the Atlantic and Gulf Coastal Plain" (U. S. Geol. Surv., Prof. Paper 90-J), may be mentioned. Important changes took place in molluscan life during the interval in the Atlantic region, and similar differences arose between the highest flora of the Cretaceous and that in the lowest of the Eocene plant-bearing beds in the Gulf region. The author of this memoir is disposed to think that the erosion interval covered a part of the closing Cretaceous period as well as the opening stage of the Eocene. H. P. Cushing (*Bull. Geol. Soc. Amer.*, xxvi, 205-216) describes a channelled unconformity at the base of the Berea grit in Ohio.

Stratigraphy.—An illuminating discussion of the significance to be attached to geological structure and to the distribution of fossils in strata in the determination of the relative age of the upper and lower parts of a stratified formation throughout its extent has appeared in the *Bulletin of the Geological Society of America* (xxvi, 205-342), the discussion concerning immediately the Morrison formation in Utah, Colorado and Montana. Contributions to the subject were made by Osborn, Lee, Mook, Lull, Berry and Stanton. Professor Osborn in summarizing the result of the symposium remarks that the Morrison began to be deposited in certain areas in closing Jurassic time and was completed elsewhere in Lower Cretaceous times, and hence may well contain certain organic remains pertaining to the different stages of deposition. The principles involved in the discussion are of wide application.

In a paper on "The Orogenic Epochs in North America" (*Jour. of Geol.*, 1914, 633-654), Eliot Blackwelder presents a summary of the advances made in recent years in the diagnosis of the structure of mountain-built districts, which is of timely interest in connection with the subject of unconformities and the control exerted on sedimentation by diastrophism. Cognate with this research is the contribution by W. T. Lee (U. S. Geol. Surv., Prof. Paper 65) on the Rocky Mountains of Colorado and New Mexico, in which region he finds reasons for believing that during the Upper Cretaceous this district had no highlands of noteworthy extent,

and that the sedimentary formations were originally continuous over the existing mountains. As a corollary to these conclusions, it is pointed out that no marked mountain-building affected the region prior to the Upper Cretaceous. The well known but neglected doctrine of shifting zones of sedimentation under the control of change of level of land and sea, proposed by Huxley and brought out by Robert T. Hill in the case of the Cretaceous of the Black Prairies of Texas, are applied by Lee to the explanation of the Dakota sandstone problem. (See also *Physical Geography, infra.*)

Faults.—E. M. Kindle and L. D. Burling (Canadian Museum Bull. 18, Geol. Ser., 28, 1915, pp. 1-23) describe the important group of faults which traverse the Palæozoic sediments of the St. Lawrence valley and form the boundary between the sediments in the border of the Pre-Cambrian shield of Canada in that region. The faulting is of the normal kind and is shown to be of post-Ordovician date. The authors point out that the recognition of this fault greatly alters the interpretation of the distribution of land and sea about the Canadian shield as shown on palæogeographic maps. From 2,000 to 4,000 ft. in thickness of Palæozoic strata must once have extended northward over the Pre-Cambrian area of the Laurentian highland, extending far towards the north the area presumably invaded by the early Palæozoic seas.

Details of geological structure are described in various papers recently issued. W. J. Miller ascribes the intraformational contorted limestone bed at Trenton Falls to differential movements within the mass of the limestone coincident with overthrust faulting, in opposition to the hypothesis advocated by Hahn that such contortions are due to the slipping of strata during the period of deposition (N. Y. State Museum Bull. 177, 1915). In the same bulletin J. M. Clarke returns to the geology of Percé, province of Quebec, whence he draws illustrations of the theme that "mountains of the Catskill type and age" probably owe their isolation as mesas "to the rifting of their sides by solution of the underlying pavement, especially where the latter is calcareous."

Geophysics.—In an article "On the Earth Considered as a Heat Engine" (*Proc. Nat. Acad. Sci.*, i, 81-86, 257-258), G. F. Becker discusses the results of recent physical experiments having a bearing on the state and temperature of the earth's interior in geological time. Of the results published by Hayford, Helmert and their associates, Becker remarks that, "since they have compelled us to concede that the earth is even now in a condition of approximate isostatic equilibrium, it seems impossible to believe that it has not been so in the past." Arguments are given for the thesis that the mechanism of the earth regarded as a heat engine is competent "to bring about all of the dynamical effects with which geology has to deal."

Coral Reefs.—The geological aspects of the coral-reef problem continue to call forth contributions in which the nature and cause of the change of level of coral islands in relation to the sea are the chief points of interest. To the classic work of Darwin and Dana, W. M. Davis, as the result of a Shaler Memorial expedition to the Pacific Ocean in 1914, brings confirmatory observations and conclusions. To quote a paragraph from his summary:

> Darwin's original theory of subsidence, supported by Dana's principle of shore-line development, gives by far the most satisfactory explanation of all the barrier reefs that I have visited in the Pacific or studied on large-scale charts, and as atolls often occur in association with barrier reefs, Darwin's theory of subsidence appears to give the best explanation of such atolls also. Atolls that are not associated with barrier reefs may be of some other origin, but this seems very improbable.

The apparent cause of the submergence of coral islands is regarded as subsidence of the ocean floor (*Am. Jour. Sci.*, xi, 223-271).

R. A. Daly (*Proc. Am. Acad. Arts and Sci.*, v, 157-251) restates in amplified form the glacial-control theory of coral reefs, in which the author holds that a submarine plateau is the dominant feature of coral seas. The theory implies a lowered wave-base and a lowered base-level for rivers

during much of the Pleistocene period, the waters of the ocean above that level having gone to make the ice-sheets. The depth of the platform is estimated to be about 70 metres below present sea-level. The appearance of depression in coral islands is thus accounted for by the melting of the glaciers, the return of the sea to its normal level, and the upward growth of the coral reefs during the stage of rising waters. (See also *Physical Geography, infra.*)

Geological Surveys.—The professional papers and bulletins of the U. S. Geological Survey contain further information concerning the coal deposits of the West and theoretical discussions of practical bearing regarding the correlation and extent of strata in the Rocky Mountain region. More than 7,300 titles now appear in the list of publications of the Survey. The memoirs of the Geological Survey of Canada, usually summarised in the annual report of the director, deal with the stratigraphy of coal, the nature and distribution of clay deposits, and special treatises on the geological structure of various fields. Fifty-nine memoirs in the geological series were either published or in press on Jan. 20, 1915. A new geological map of the state of Tennessee, compiled by O. P. Jenkins under the direction of H. H. Perdue, has appeared on the scale of 1:500,000, with explanatory matter.

Geological Guidebooks.—Few countries possess more voluminous and detailed reports on their geological structure than the states of the American Union, but few have so little literature in the form of guidebooks for the use of the intelligent traveller whether geologist or layman. *Nature and Science on the Pacific Coast* (San Francisco, Paul Elder & Co., 1915) contains a helpful chapter on the geology of the Pacific Coast region by C. F. Tolman, Jr., summarising the structure and geological history. The U. S. Geological Survey has issued four very complete guidebooks, covering in the most thorough manner the great transcontinental routes from the Mississippi region to the west coast, with notes on the points of geological and geographical interest (see also X, *U. S. Geological Survey*). The books contain complete route maps, mile by mile, and give a surprising amount of information not only for the car-window observer, but for the sojourner at stations along the several routes.

Geological History.—The popularization of physical geography brought about by the teaching of physiography as the geologist sees the earth has suggested the adaptation of the account of the more obscure changes of earth structure in geological time to the general reader in language which he can readily understand and appreciate. A notable essay of this character has been published from the pen of Professor Barrell for the people of the state of Connecticut. "Central Connecticut in the Geologic Past" (Conn. Geol. and Nat. Hist. Surv., Bull. 23) is devoted to the history of the Triassic formation and valley in that state. From an educational point of view, the experiment is worth repeating in other fields. Incidentally, the author develops the theory of concomitant faulting, erosion, and deposition in the explanation of the main boundary fault of the Triassic area.

Bibliography.—L. V. Pirsson and Charles Schuchert's *Textbook of Geology* (Part I, *Physical Geology;* Part II, *Historical Geology;* New York, Wiley & Sons, 1915) is a new and authoritative treatise, by Yale specialists, presenting the broad facts and principles of the science. The palæogeographic charts of North America by Professor Schuchert give the results of years of research into the past geography of the continent. The U. S. Geological Survey issued its latest list of the "Publications of the U. S. Geological Survey" in March, 1915; the pamphlet contains a finding list of subjects. R. W. Brock's *Summary Report* of the Geological Survey of Canada for 1913 (Ottawa, 1914) contains, besides special papers, brief digests of others embodied in the memoirs.

ECONOMIC GEOLOGY

ADOLPH KNOPF

Theory of Ore Deposits.—The results of an exhaustive study of the origin of the zinc and lead deposits

of the Joplin region, which embraces parts of Missouri, Kansas and Oklahoma, is given by C. E. Siebenthal (U. S. Geol. Survey Bull. 606). His theory, in brief, is that the ore deposits, which occur in a peripheral belt surrounding the nucleus of crystalline rocks of the Ozark uplift, were formed by the artesian circulation set up in the stratified rocks in consequence of the domal warping given them during the uplift. The underground waters flowed down the sides of the dome in Cambrian, Ordovician, and overlying rocks; they were charged with salts of the alkali metals, with hydrogen sulphide, and with carbon dioxide, and were therefore able to extract the zinc and lead from the strata through which they moved; and on rising to the surface at the inner edge of the Pennsylvanian shale, the carbon dioxide escaped and the dissolved zinc and lead were precipitated as sulphides by the hydrogen sulphide. These waters were similar to waters now rising under similar conditions in the surrounding region. The most important collateral evidence in support of this theory is that the sediments that accumulate in reservoirs supplied by wells penetrating the Ordovician and Cambrian rocks contain considerable quantities of metallic sulphides. Siebenthal has demonstrated, it appears, that ordinary cold artesian waters have deposited ore bodies of great commercial importance, Joplin being the most productive zinc district in the United States. In view of the fact that, according to current thought, most ore bodies have been deposited from solutions escaping from cooling igneous rocks, this demonstration of the efficiency of cold meteoric water acquires additional significance.

B. S. Butler discusses the relation of the ore deposits of Utah to different types of intrusive bodies of igneous rocks (*Econ. Geol.*, 1915, 101-122). The ores are generally associated with igneous rocks and the value of the output to the close of 1913 exceeds $635,000,000. Of this sum less than one-half of one per cent. has come from deposits associated with laccoliths or "medially truncated" stocks; and of the $111,000,000 known to have been distributed by metal mining companies all has come from deposits associated with "apically truncated" stocks, in other words, with bodies whose tops have been slightly uncovered by erosion. The explanation advanced is that the magmatic emanations, which are the agents of transportation and deposition of the ores, tend to collect in the tops of the stocks; and that in the medially truncated stocks erosion has progressed far enough to have removed entirely the roots of the veins.

The barite-iron sulphide deposit at Meggen, Westphalia, is thought by A. Bergeat (*Neues Jahrb. Beil*, xxxix, 1-63) to be a stratum formed in the Devonian sea, though ultimately related to the volcanic activity of that epoch. The iron sulphide consists mainly of oölitic marcasite, and the barite, constituting the largest known deposit of this substance, generally lies above the sulphide, the two together forming a bed ranging in thickness from 1.5 to 6 m.

Gold and Platinum.—W. Lindgren describes the most remarkable shoot of high-grade gold ore yet found in the West, that at National, Nev. (U. S. Geol. Survey Bull. 601). This shoot produced nearly $4,000,000 in ore averaging $20 a pound. It is shown to be primary; since its original deposition there has been no translocation of gold or silver by the action of descending surface waters. Beyond this, however, the explanation of the extraordinary localization of gold in this shoot remains a baffling enigma.

The recently recognized gold-platinum-palladium ore from the Boss mine, Nevada, is described by A. Knopf (U. S. Geol. Survey Bull. 620-A). The precious metals are particularly associated with the rare minerals plumbojarosite and beaverite in a gangue of fine-grained quartz carrying sporadic octahedrite. The lode is a replacement of Carboniferous dolomite and is probably related genetically to the quartz-monzonite porphyry intrusions in the region. The deposit has no close analogue and its features violate a number of long cherished generalizations. Production of platinum commenced

late in 1914 and a yield of 110 oz. was reported, the largest production as yet from a lode mine.

Coal.—David White analyzes the relations in origin between coal and petroleum (*Jour. Wash. Acad. Sci.*, v, 189-212). A review of the data of the world's oil fields shows conclusively that the petroleums exhibit regional differences that vary correspondingly with the rank of the coals in the same fields. No commercial oil pools have ever been found in regions in which the devolatilization of the coal has proceeded beyond 70 per cent. fixed carbon. This relation, therefore, appears to furnish a criterion by which large areas of sedimentary strata can be excluded as territory in which it would be futile to prospect for oil.

"Coal Field and Coal Resources of Canada" (Geol. Survey of Canada, Mem. 59) by D. B. Dowling is a reprint, with some additions, from *The Coal Resources of the World* and gives in more available form the data on Canada.

MINERALOGY AND PETROGRAPHY

HERBERT P. WHITLOCK

Owing to the unsettled conditions incident to the war in Europe no scientific work of importance has appeared in any of the warring countries during the year, although the scientific journals continue publication with articles and papers which were mostly contributed before the outbreak of hostilities.

Chemical Mineralogy.—An important contribution to the literature of chemical mineralogy is the new and revised edition of *The Constitution of the Natural Silicates*, by Frank Wigglesworth Clarke (U. S. Geol. Surv. Bull. 588). The new matter of this edition abounds in lucid presentations of facts and suggestive observations, as, for example, the discussion of the dehydration derivatives of orthosilicic acid. Many of the "chain" formulae have been written more compactly, particularly among the zeolites. The author also devotes several pages to a discussion of the formula for the fundamental tourmaline acid, reviewing the work done in this field since the publication of the Penfield-Foote formula.

Two notable papers have covered the published investigations of the Carnegie Geophysical Laboratory of Washington on problems of mineral synthesis and eutectics. The first of these is a study of the "Ternary System CaO-Al_2O_3-SiO_2" by G. A. Rankin, with an optical study by Fred. E. Wright (*Am. Jour. Sci.*, xxxix, 1-79). This painstaking and exhaustive work records the results of some 7,000 heat treatments together with the subsequent optical examination of the products. The equilibrium diagram, which represents the stability relations of the components and possible compounds, is divided into 14 separate fields, whose boundary curves do not differ very materially from those plotted in the provisional diagram, published in 1911 as part of the "Preliminary Report on the Ternary System CaO-Al_2O_3-SiO_2." It is interesting to note that the five fields yielding exclusively synthetic minerals cover about half the area of the total field and are enclosed by an outline joining the points Al_2O_3-$2CaO.Al_2O_3.SiO_2$—$CaO.SiO_2$-SiO_2-$Al_2O_3.SiO_2$. In the application of the results of the study to problems of mineral genesis the authors point out the dissimilarity of the laboratory conditions from those involved in mineral formation, citing as an example the failure to produce the mineral cyanite ($CaO.Al_2O_3.SiO_2$) in the laboratory. The concentration-temperature diagram of the ternary system is worked out in three dimensions as a solid model, which does much to visualize the somewhat complex relations involved.

The "Study of the System Anorthite-Fosterite-Silica," by Olaf Anderson (*ibid.*, 407-454), which constitutes the second contribution from the Carnegie Laboratory, deals with a problem which is more intimately a petrographic one than is the case in the study previously cited. In defining the scope of his work, the author points out that the relations of the system $CaAl_2Si_2O_8$-Mg_2SiO_4-SiO_2 can be explained only by considering this a part of the quarternary system CaO-MgO-Al_2O_3-SiO_2, of which one of the four exterior "skeleton" systems,

CaO-Al_2O_3-SiO_2, has just been studied; he confines his discussion to that portion of the system in which the composition of the melts can be expressed in terms of the components anorthite-fosterite-silica, emphasis being laid on the portion which can be treated as a ternary system. The discussion is thus narrowed down to a three-component system. In formulating his results the author lays stress on the "reaction principal," that magmatic resorption and recurrent crystallization is explainable as the result of a simple cooling magma and need not necessarily imply changes of physical condition due to exterior influence, or of chemical composition of the magma as a whole, during solidification. The application of the reaction principal to olivine-bearing rocks furnishes a rational and simple explanation of several phenomena familiar to petrographers in this field.

Gems and Precious Stones.—The literature of this branch of mineralogy has been enriched by the publication of an extensive monograph on the turquois by Joseph E. Pogue (*Mem. Nat. Acad. Sci.*, vii). In the chapters dealing with the mineralogy, the occurrence and the origin of turquois the writer has collected an array of facts the number and variety of which are well attested by the multitudinous foot notes. Particularly is this so in the chapter on the occurrence of turquois, where the author has somewhat digressed into the interesting fields of history, archæology and folk lore; these are treated at still greater length in the chapters on the use of the turquois, the chalchihuitl question and the mythology and folk lore of turquois. In connection with these latter divisions of the subject generous acknowledgment is made to Berthold Laufer of the Field Museum for assistance in the compilation of the matter relating to India, Tibet and China. After an elaborate discussion of the chalchihuitl question, the author favors the theory that, in the Southwest chalchihuitl corresponded to turquois, and that in Mexico and Central America the term was applied to jade. The monograph is illustrated by 22 plates which show chiefly the archæological and ethnological uses of turquois and reproduce specimens from the collections of the U. S. National Museum, the Field Museum, the British Museum and the India Museum.

Textbooks.—*The Pocket Dictionary of Common Rocks and Rock Minerals*, prepared and published in 1914 by Prof. Collier Cobb of the University of North Carolina (Chapel Hill, N. C.), has already gone into a second edition. It meets the demand for a small handbook which will furnish to college students of geology concise definitions of the terms to be met with in their professional reading, such words as atmogenic, arkose, bradyseism, bysmalith, chonolith, dreikanter, eutectic, femic, etc., testifying to the scope, thoroughness and modernity of the work. Although the author has taken pains to point out that it was designed primarily for his own students, it seems to adapt itself to a considerably wider field. *Minerals and Rocks* (Appletons), by Prof. W. S. Bayley of the University of Illinois, is a short descriptive laboratory manual for the use of students in General Geology, covering the more important minerals and rocks and giving the tests and tabular keys for their determination.

EARTHQUAKES AND VOLCANOES

Harry Fielding Reid

Earthquakes. — The British ship *Aleppo* reported a "tremendous shock" in the Atlantic about 300 miles southwest of Halifax on Jan. 22. A series of light shocks occurred along the Merrimac Valley, Mass., between 9 and 10 p. m. on Feb. 20. At 6:41 p. m. on Feb. 21, a light shock was felt just west of Lake Champlain in New York. Bristol in the northeastern corner of Tennessee, reported a light shock at 4:20 a. m. on Jan. 14; and a fairly sharp shock occurred in the Sunken Country, where Tennessee, Kentucky and Missouri meet, at 5:40 p. m. on April 28. Moderate shocks were felt in Illinois—at Harrisburg at 12:55 a. m. on Feb. 5; and at Mound City and Cairo at 10:35 p. m. on Feb. 18. A light shock occurred at Lythe, Mont., at 8 a. m. on March 4,

and another at Williston, N. D., on Aug. 8. The northeastern part of the Yellowstone Park experienced a pretty sharp shock at 9:10 a. m. on May 8; it was equally strong at Canyon Station (at the entrance of the Park) and at Tower Falls, 20 miles to the southeast; it must have been sensible over an area of 50,000 sq. miles or more. Moderate shocks were felt at Montpelier, Idaho, at 8:25 p. m. on March 14, and at Bedford, Wyo., at 11:30 a. m. on March 31. A sharp shock occurred at Enterprise, in the southwestern part of Utah, at 10:25 p. m. on Dec. 20, 1914, and light shocks on Feb. 12 and 13, 1915. A strong shock originated near Provo, Utah, about 3 p. m. on July 15; some ceilings were cracked; it was felt 40 miles to the north at Salt Lake City, and was probably sensible over an area of 5,000 sq. miles. A shock was reported at Gerland, northeast of Great Salt Lake, on July 30, at 11:50 a. m., and one at Josepa, south of the Lake, on Aug. 1.

The most severe earthquake of the year in the United States occurred in Pleasant Valley, south of Winnemucca, Nev., on Oct. 2. There were three strong shocks, with more or less continuous movements going on between them. The first was at 3:38, the second at 5:47 and the third at 10:53 p. m.; the first was the weakest, the last was by far the strongest. It is reported to have lasted 15 minutes and to have destroyed much property in Pleasant Valley; buildings were injured and water tanks overthrown within a distance of 50 miles or more of the center. In Winnemucca, which is about 50 miles from the center, chimneys were thrown down and many walls cracked. The heaviest shock was felt for 300 miles or more in all directions, including the whole of Nevada and parts of California, Oregon, Idaho and Utah. Seismographs all over the country recorded the shocks. The cause of the disturbance was a break in the rock and the formation of a fault along the east side of Pleasant Valley; the new fault is about 20 miles long, and trends almost exactly north and south; the western side has dropped from six to 12 ft. relatively to the eastern.

Moderate shocks were reported in Washington at Longmire on Jan. 25, at Queets River on Feb. 10, and at Tacoma and neighborhood at 10:34 a. m. on April 22; at Lakeside, in the central part of the state, light shocks occurred on Feb. 28 (two), on March 5 (two) and on July 18 (one). Summerville, Ore., reported a light shock on Jan. 18. The northern part of Washington and the southern part of British Columbia experienced a sharp shock on Aug. 18 at 6.05 a. m.

Many shocks were felt in California. In Humboldt County there were light shocks at Eureka on Dec. 10, 1914, Feb. 18 and July 22, 1915; at Rohnerville and Shively on Jan. 14 and June 4; and at China Flat on March 29. Branscomb reported shocks on Jan. 31, May 2 and 6; the first two were very light but the last was pretty sharp; it occurred at 4:10 a. m. and was felt at Eureka, 80 miles to the north, and at Willetts, 60 miles to the south; it was sensible over an area of about 15,000 sq. miles. Moderate shocks were felt in the neighborhood of Lassen Peak on Jan. 23, Feb. 21, May 3 and 22, July 21 and 22, and Aug. 5 and 6; they were probably connected with the volcanic activity of the peak (see *infra*), though they did not always coincide with the strongest outbursts. Moderate shocks occurred near the California-Nevada boundary a little southeast of Lake Tahoe on April 5 (two) and 16, and on June 27. The second shock of April 5 was fairly strong and was felt over an area of 15,000 to 20,000 sq. miles. Another fairly strong shock, whose origin was probably in the Sierras to the northwest of Owens Lake, occurred on May 28 at 10:46 p. m. It was felt over a somewhat larger area than the last on the slope of the Sierras and in the Great Valley from Merced to Bakersfield. A light shock was reported from Bakersfield and Glennville about 12 hours before, and another from Fresno about 14 hours after, the Sierra shock.

Moderate shocks were felt about San Francisco Bay on June 6 and Oct. 1. On Nov. 8, 1914, at 6:31 p. m., a severe earthquake had its origin in the Santa Cruz Mountains about 10 miles north of Monterey Bay. Near

the center chimneys were thrown down, movable objects overthrown, plaster cracked, clocks stopped and two water pipes were broken. The shock was felt as far as Santa Rosa, 100 miles to the northwest and perhaps as far to the southeast; the area shaken may be put at from 15,000 to 20,000 sq. miles; the origin was near, if not on, the San Andreas fault, the fault that was responsible for the great earthquake of 1906. The seismograph at Los Gatos, about seven miles north of the center, indicated a movement of the ground of nearly a half-inch north and south, followed by smaller vibrations. Another strong earthquake, but not quite so severe as the one just mentioned, occurred in the same region on Dec. 28 at 2:43 a.m.; its origin may have been somewhat west of the former. It was sensible over an area of about 10,000 sq. miles. Light shocks were felt in the Santa Clara Valley, or a little south of it, on Nov. 21, 1914, Jan. 17, 1915, Feb. 28, March 16 and 31, April 6, and June 17. The strongest of these (April 6) had its origin not far from Salinas and was felt over about 500 sq. miles. Moderate shocks were felt at San Luis Obispo on Nov. 8, 1914, and on April 21 and Sept. 8, 1915.

A severe earthquake, central near Los Alamos, Santa Barbara County, occurred on Jan. 11, at 8:31 p.m. Over an area of about 200 sq. miles all chimneys were damaged, some cracked and many overthrown; brick walls were cracked, and some pipes in the ground broken. The shock was strongly felt in the neighboring towns of Santa Maria, San Luis Obispo, Lompoc, Santa Barbara, etc. The area sensibly shaken was about 30,000 sq. miles. Lighter shocks followed daily for a month or more. The shock may have been due to movement on a fault which has been located in the central area, but no independent proof of such a movement has been found.

At 7:05 on June 18 a fairly strong shock was felt on Santa Catalina Island and the mainland near Los Angeles; its origin was probably under the sea near the island. The next morning a second shock, but very light, was felt on the island. A number of shocks, some of them pretty sharp, were felt at various points in the mountainous region between San Diego and the Southern Pacific Railroad, about 90 miles to the northeast; they occurred on Dec. 29, 1914, Jan. 12, 1915, Feb. 16 and 17, March 4 and 12, April 1, 3, 13 and 20, and May 11 and 13.

One of the most serious earthquakes of the year occurred in the Imperial Valley, near the California-Mexico boundary; it was led up to by a number of light shocks, which were reported on Jan. 20, 26 and 28, March 1 and 30, April 27, 29 and 30 and May 1. On June 22 at 7:59 p.m. a very heavy shock occurred, central near the towns of Calexico and Mexicali; it was followed at 8:56 p.m. by a second shock nearly as strong as the first. These shocks caused the collapse of a number of lightly built brick buildings, and the death of five persons in Mexicali; there was very serious property loss, and some damage to the extensive irrigation plants of the valley. The shocks were felt as far as the Pacific coast (100 miles) on the west, as far as Los Angeles (170 miles) on the northwest, at Wittenberg (190 miles) to the northeast, and at Tucson (250 miles) to the east. The shocks must have been sensible over an area of about 120,000 sq. miles. They were recorded at seismological observatories all over the United States. A number of aftershocks were felt, the strongest on July 3, Aug. 18, 19 and 25.

On Oct. 15 at 8:10 p.m. a strong shock, lasting 10 seconds, greatly frightened the people at Seward, Alaska; it was felt throughout the Kenai peninsula. In the Canal Zone sharp shocks were felt on Jan. 24, 25 and 26, and on June 28; but they did not originate in the Zone. The last shock seems to have accelerated a small slide which had started three days earlier; no other damage was done.

A severe earthquake in the department of Ayacucho, Peru, on Dec. 6, 1914, destroyed many houses and killed a number of people. A moderate shock was felt in southern Brazil on Feb. 2. A destructive earthquake occurred in southern Guatemala on Sept. 6, doing great injury

to churches and other buildings over a wide district.

A very severe shock occurred at 7:53 a. m. on Jan. 13 in the mountainous region about 60 miles east of Rome, Italy. Nearly 30,000 persons were killed, and many towns ruined. About 96 per cent. of the population of Avezzano lost their lives, the highest death-rate due to an earthquake so far known. This high rate was undoubtedly due to inadequate construction. The shock was felt for a distance of 300 or 400 miles along the Italian peninsula. Some damage was done at Rome. Aftershocks, some severe, continued for several months.

Congress has now authorized the Weather Bureau to carry on seismological studies. On account of its large number of regular and volunteer observers this Bureau is especially fitted to collect information regarding felt earthquakes; and the reports published in the *Monthly Weather Review* since December, 1914, bring to light a number of earthquakes which would otherwise have been lost sight of, and foreshadow a much more complete list in the future. (See also *Meteorology and Climatology, infra*).

Volcanoes.—Until May the eruptions of Lassen Peak were of the same character as reported in the last issue of the YEAR BOOK (p. 597); there were many outbursts of dust, ashes and steam, but the frequency was becoming less. On April 29 a great cloud of ashes was carried 40 miles by the wind. On May 19 great blasts were forced out on the northeastern and on the western flanks of the mountain, which melted the snow, and the water thus produced carried down the volcanic dust lying on the mountain side in the form of mud flows which did great damage to the forest and grazing lands in the valleys below. This eruption continued with interruptions for three or four days, and many people were driven from their homes. Other mud flows were caused by later eruptions, especially on May 30. Since then the activity of the volcano has been declining, and no very serious eruption has occurred. Slight earthquakes (see *supra*) accompanied some of the eruptions.

In the end of November, 1914, the summit crater of Mauna Loa, in the Hawaiian Islands, which has long been quiescent, was reported in eruption, with lava flowing down the sides of the mountain.

Mt. Iliamna, west of Cook Inlet, Alaska, was in eruption on May 18, also an unidentified peak near it; it was again active at the end of July. Katmai may also have been active at that time.

The volcano Izalco, in western Salvador, was in full eruption in the middle of October; it lies close to the southern part of Guatemala, which experienced a destructive earthquake on Sept. 6.

METEOROLOGY AND CLIMATOLOGY

ROBERT DEC. WARD

The Weather Bureau.—Since Jan. 1, 1914, the *Monthly Weather Review* has distinctly taken its position as our national meteorological magazine. Most of the papers on meteorology and climatology which are published in the United States now appear in the *Review*. In this way, the Weather Bureau is making an important and effective contribution to the advance of American meteorology. Several important papers prepared for the International Meteorological Congress at Chicago in 1893, not previously published, have appeared in the *Review* (xlii, 1914; xliii, 1915). Among these are papers by von Bezold, on the thermodynamics of the atmosphere; by von Hann, on the nature of cyclones and anticyclones; and by Pernter, on the diurnal changes in temperature, pressure and wind. The results of Prof. H. H. Kimball's work on solar and sky radiation intensities at Mt. Weather have also been published there. The daily weather map of the northern hemisphere, whose publication was begun Jan. 1, 1914, was discontinued on Aug. 6, on account of the lack of European reports, owing to the war. A new service for reporting daily weather conditions over the principal range regions of the West, as af-

fecting live-stock interests, was begun in the spring of 1914. Congress having given authority to the Weather Bureau to conduct seismological work (beginning July, 1914), this service has been resumed (see also *Earthquakes and Volcanoes, supra*). A systematic collection of non-instrumental reports of earthquakes is to be supplemented, as rapidly as funds permit, by instrumental records.

General Meteorology.—The most important meteorological publication of the year is a general one, the third edition of von Hann's *Lehrbuch der Meteorologie* (Leipzig, 1915). No textbook even remotely approaches this in completeness or in authoritativeness. It is the universally acknowledged standard. The third edition is a thorough revision of the work, and is absolutely indispensable to all workers in meteorological science.

Rain and Snowfall.—Charles F. Brooks has made a notable contribution to American climatology in his detailed charting and study of the snowfall of the eastern United States (*Mo. Weather Rev.*, xliii, 1915). The monthly snowfall charts accompanying his paper are the first complete ones of their kind. The same author has also investigated the distribution of snowfall in certain cyclones of the eastern United States (*ibid.* xlii, 1914), and finds that the heaviest snowfall comes with northeast winds, and occurs in a belt about 100 to 200 miles north of the track. In a study of the rainfall of the eastern United States (*ibid.*, xliii, 1915), B. C. Wallis gives a new set of charts showing "equipluves." These are lines of equal percentages of rainfall departure, for month or year, from the rainfall norm for that period, the norm being the amount of rainfall which would occur at a given place on the assumption that such rainfall were evenly distributed through the year. A new map of the rainfall regions of the eastern United States is also given. The same author has continued his detailed study of our rainfall in two other papers, dealing with the distribution of rainfall in the western United States and with rainfall and agriculture (*ibid.*). Andrew H. Palmer has discussed the remarkable region of greatest snowfall in the United States, on the Sierra Nevada Mountains of California (*ibid.*). Several photographs illustrate the phenomenal conditions of this snowfall.

Storms.—The first of a new series of "Supplements" to the *Monthly Weather Review* is a brief, clean-cut discussion of the storm types of the United States and their movements, by Edward H. Bowie and R. H. Weightman, with a set of charts setting forth in great detail the normal 24-hour movements. The rôle of the glacial anticyclone in the air circulation of the globe, with special reference to glaciation in the polar regions, is considered by Prof. W. H. Hobbs (*Proc. Amer. Phil. Soc.*, liv, 1915). A careful summary of our present knowledge of thunderstorm physics, together with a discussion of thunderstorm types, has been prepared by Prof. W. J. Humphreys (*Mo. Weather Rev.*, xlii, 1914; *Jour. Franklin Inst.*, clxxviii, 1914).

Weather. — The effects of the weather conditions upon the military operations in the European War have been many and varied. In many cases, as in past wars, the weather has determined success or failure. The more important examples of these relations have been collected and discussed by Prof. R. DeC. Ward in a series of short papers (*Pop. Sci. Mo.*, lxxxv, 1914; *Jour. Geogr.*, xiii, 1915). The importance of an appreciation of the weather element in an understanding of American climates has been emphasized by the same writer (*Annals Assoc. Amer. Geogr.*, iv, 1914), who illustrates his discussion by means of a large number of simplified, composite type weather maps, and by barograph and thermograph curves. The character of the winter in the eastern United States is largely determined by the presence or absence of the Bermuda "high," according to Prof. W. J. Humphreys, who believes that the controls of this "high" may be found in the Labrador current, and thus weather forecasts two weeks or a month in advance may perhaps be made (*Mo. Weather Rev.*, xlii, 1914).

Frost Protection.—The question of frost protection is important in

many sections of the United States, and is every year receiving an increasing amount of attention on the part of officials of the Weather Bureau and others. A series of excellent papers on this subject, some of them illustrated, gives a clear idea of what is being done, and of how frost protection is actually accomplished (*ibid.*). In this same connection, Prof. Alexander McAdie considers temperature inversions in relation to frost (*Annals Astron. Obsy., Harv. Coll.*, 1915).

Climatology of California.—California again leads in the number of publications relating to the climatology of a single section of the United States. William G. Reed has given a brief summary of the meteorological data for Mt. Hamilton, where a meteorological record has been kept for nearly 34 years (*Mo. Weather Rev.*, xlii, 1914). A short illustrated account of the clouds of California (Los Angeles, 1914), by F. A. Carpenter, adds to the international cloud classification the local form, *el velo*, the common coast cloud of early morning and late evening in the summer of southern California.

Climate and Crops.—It is a hopeful sign of the increasingly practical application of the immense accumulation of meteorological data in this country to see the emphasis which is more and more being laid on the relations of the various climatic elements and our crops. Prof. J. Warren Smith has made an important investigation of the effect of the weather upon the yield of potatoes (*Mo. Weather Rev.*, xliii, 1915), illustrated by an interesting series of charts. Supplement No. 2 of the *Monthly Weather Review* (1915) contains two contributions along the lines of agricultural climatology, a calendar of the leafing, flowering and seeding of the common trees of the eastern United States, by George N. Lamb, and one giving the phenological dates recorded at Wauseon, O., by Thomas Mikesell. Thomas A. Blair points out that in the Dakotas the rainfall of May and June, and the mean temperature of June, are the important weather factors affecting the wheat crop (*ibid.*, xliii, 1915). In Maryland, the relation of climate and plant growth has been receiving much attention, under the auspices of the Maryland Weather Service. A preliminary report of the investigations, by Forman T. McLean, deals primarily with the methods of investigation and of interpretation of the results (*ibid.*).

Climatic Provinces and Changes.—None of the climatic provinces hitherto suggested for the western United States seem satisfactory to William G. Reed, who has suggested a new grouping of that region into two large provinces, based upon general relations to rainfall conditions, with several subdivisions (*Bull. Amer. Geogr. Soc.*, xlvii, 1915). Prof. R. De C. Ward presents a new subdivision of the climatic provinces of the United States which seems to the author simpler and more logical than the classifications previously suggested (*ibid.*). Prof. Ellsworth Huntington has continued his studies of the causes of climatic "changes" in a discussion of the solar hypothesis (*Bull. Geol. Soc. Amer.*, xlv, 1914).

TERRESTRIAL MAGNETISM

Daniel L. Hazard

Observations on Land.—The magnetic survey of the United States was continued by the occupation of about 400 stations, including 80 repeat stations and numerous auxiliary stations in locally disturbed areas. In Canada the season's work was nearly all in British Columbia, one chain in the southern part and one in the northern, some 60 stations altogether. Results are now available for a series of stations at approximately 25-mile intervals, extending across Canada from longitude 57° to 124°. It is expected that the revision of the magnetic survey of Great Britain will be completed during 1915. A preliminary investigation shows a more uniform annual change of declination since 1891 than was indicated by the surveys of 1886 and 1891. The first general survey of India having been completed, field work during the year was confined to the reoccupation of

repeat stations and the comparison of instruments at the observatories, the most of the time of the magnetic party being devoted to the reduction of the observations to a common epoch. The Department of Terrestrial Magnetism of the Carnegie Institution of Washington had parties at work in central Brazil, the interior of southern China and Mongolia, Australia and the outlying islands of Australasia, Belgian Congo and Angola and the southwest coast of Africa. A trans-Saharan expedition to central Africa, for which plans had been completed, had to be given up on account of the war. This Department hopes to complete a first general magnetic reconnaissance of the globe by the end of 1916, and is planning the inauguration of observatory work in terrestrial magnetism and atmospheric electricity in parts of the world, especially in the Southern Hemisphere, where such work is needed.

Observations at Sea.—The *Carnegie* left Brooklyn on March 6 on a cruise to last two years, going first to Honolulu by way of the Panama Canal, then to Dutch Harbor, and from there an 8,000-mile voyage to Port Lyttleton, New Zealand, where she is expected to arrive in October, 1915, and prepare for a circumnavigation of the globe in low southern latitudes.

Investigations.—Eric N. Webb has undertaken the reduction of the magnetic observations made by the Australian Antarctic Expedition in 1912-1913 and in that connection is making a comparative study of the simultaneous rapid-rate registrations secured by various observatories in coöperation with that expedition. Charles Chree is making a comparative study of the magnetic disturbances recorded by the Scott Antarctic Expedition of 1911-1912 with the corresponding records of some of the principal magnetic observatories. A number of observatories have undertaken a joint investigation of the activity (Tätigkeit) of the earth's magnetism for the year 1915 according to the method proposed by the late Dr. Bidlingmaier. L. A. Bauer has continued his investigation of a possible relationship between changes of solar radiation and terrestrial magnetism (*A. Y. B.*, 1914, p. 601). In the allied subject of atmospheric electricity, W. F. G. Swann has made an elaborate theoretical and experimental investigation leading to the adoption of improved instruments and methods for the present cruise of the *Carnegie*.

Publications.—The U. S. Coast and Geodetic Survey has published the results of field observations made during 1914; an isogonic chart of the West Indies for 1915; an isogonic chart of the United States for 1915, with accompanying secular change tables. The Department of Terrestrial Magnetism of the Carnegie Institution of Washington has published "Land Magnetic Observations, 1911-1913, and Reports on Special Researches," including the results of instrumental comparisons at observatories, made between 1905 and 1914, and the derivation of the international magnetic standards adopted by that Department. The portion of the tenth edition of Müller-Pouillet's *Lehrbuch der Physik und Meteorologie* treating of "Magnetism and Electricity" has been published, the article on terrestrial magnetism having been prepared by Dr. A. Nippoldt.

Among the important publications of the year in periodicals may be mentioned: L. A. Bauer and W. J. Peters, "General Results of the Magnetic Survey of the Pacific Ocean" (*Terres, Mag.*, Sept., 1915); J. C. Beattie, "Secular Variation of the Magnetic Elements in South Africa during the Period 1900-1913" (*Trans. Roy. Soc. of South Africa*, iv, pt. 3); Charles Chree, "Magnetic Character Figures, Antarctic and International" (*Proc. Phys. Soc. of London*, xxvii, pt. 3); S. Chapman, "The Lunar Diurnal Magnetic Variation and Its Changes with Lunar Distance" (*Trans. Roy. Soc. of London*, 1915); Otto Klotz, "Magnetic Observation in Canada in 1914" (*Jour. Roy. Astron. Soc. of Canada*, April, 1915).

Necrology.—Dr. Fr. Bidlingmaier, formerly in charge of the magnetic observatory at Wilhelmshaven and later at Munich, died on Sept. 23, 1914. Dr. Aksel S. Steen, director of the Norwegian Meteorological Institute, under whose direction Amund-

sen's magnetic observations in the vicinity of the north magnetic pole were being computed, died on May 10, 1915. Sir Arthur Rücker, F. R. S., who with T. E. Thorpe carried out the magnetic survey of the British Isles for the epochs 1886 and 1891, died on Nov. 4, 1915.

GEOGRAPHY

PHYSICAL GEOGRAPHY OF LAND AREAS

WALLACE W. ATWOOD

Practical Applications of Geomorphology.—Progress during the year has been marked by several careful investigations of special problems in physical geography, and among all field workers in geology and geography an increasing amount of attention has been given to the systematic interpretation of the land forms in the regions under study. Nearly 50 years have passed now since the organization of the science of geomorphology was well begun. Many of the principles used in that science are well established, and the goal towards which the present workers are tending is the careful application of these principles in the interpretation of physiographic forms. As the science has developed it is of special interest to note that many are now finding ways of applying this science to problems of economic or commercial importance. In the YEAR BOOK for 1914 (p. 602) a brief statement was made on the possible relation of the evolution of the land surfaces in regions of rich mineral deposits to the secondary enrichment of such deposits, and physiography may yet make an important contribution to that subject. During 1915 the present writer has found, in the examination of several reservoirs where serious leaks have developed, that there was a very evident failure on the part of the engineers to recognize the formations upon which they were depending to hold large supplies of water in certain mountain canyons. The surface exposures about those formations were, perhaps, somewhat confusing, but the general topography of the deposit, the topography of the bordering region, and the topographic relations of the deposits made clear the thickness, extent, physical composition, texture and origin of those deposits. In some instances vast sums of money have been unwisely invested. Geomorphology is furthermore making important contributions to the more strictly geological studies of some investigators, as has been evidenced during the year in the work of Gregory, Davis, Daly and Barrell described below.

The Great Lakes and the Glacial Deposits of Indiana and Michigan.—The most elaborate work on physical geography which has appeared during the year is a monograph prepared by Frank Leverett and Frank B. Taylor, entitled "The Pleistocene of Indiana and Michigan and the History of the Great Lakes" (U. S. Geol. Surv., Monagr. liii). The report gives a comprehensive description of the remarkable systems of moraines in the southern peninsula of Michigan and in Indiana. Numerous examples of glacial topography, and of land forms resulting from the deposition of sands and gravels by glacial waters, are described. The drainage from the front of the ice has been worked out with nice detail. The successive positions of the ice front while the great continental glaciers were melting away, and the shore lines of the ice-front lakes, have been indicated on a series of maps. Moraines which were laid down on the land are distinguished from those laid down under water.

In this monograph appears the most detailed account of the history of the Great Lakes that has been published. The ancestral lakes include Glacial Lake Maumee, Glacial Lake Chicago, Glacial Lake Saginaw, Glacial Lake Arkona, Glacial Lake Whittlesey, Glacial Lake Wayne, Glacial Lake Warren, Glacial Lake Lundy and the transition to Lake Algonquin, Glacial Lake Algonquin, and the Nipissing Great Lakes. The extent of these various lakes, which represent stages in the history of the present lakes, and the outlets which the waters followed at the various stages are shown in excellent maps.

Physical Geography of the Rocky Mountains.—In a series of articles published during the year in the *Journal of Geology*, Eliot Blackwelder has presented a report, based on several seasons of field work, on the late geologic history of the mountains of central western Wyoming, and has included in this report an analysis and an interpretation of the physiographic features of that region. The numerous mountain ranges in this portion of the country had their main period of growth near the close of Upper Cretaceous time, or early in the Tertiary period. Those early mountains were nearly obliterated, and about them vast quantities of sediments were laid down. Later, perhaps in mid-Miocene time, the district was notably up-warped and locally faulted, and these movements were probably associated with a general elevation of that portion of the region above base-level. From that time on to the present, western Wyoming has been a scene of continual denudation. The master streams of the region have controlled the general shaping of the topography, but many details have been due to the work of glaciers or winds, or to the slumping of land masses. There seems to have been developed in this long period of denudation a widespread peneplain, and in the succeeding cycles, of which there appear to have been four, that peneplain has been much dissected. While the erosion cycles were in progress ice formed among the higher mountains during two and possibly three distinct epochs, and since the last disappearance of the ice only slight topographic changes have been made.

Inland Marine Terraces in Eastern United States.—The study by Joseph E. Barrell of certain remnants of a series of marine benches far inland from the Atlantic coast has proven to be most interesting and significant. The marine terraces which Barrell has recognized come at elevations ranging up to 2,400 ft. above sea-level. Remnants of these terraces have been mapped in southern New England, and other remnants have been recognized in the Piedmont area east of the Appalachian Mountains as far south as Maryland. The age of these terraces has been determined as post-Jurassic, and the two lower ones are probably Pleistocene. Vigorous glaciation has obscured the record of these ancient incursions of the sea in New England, but by very careful and critical field work, accompanied by an equally careful study of topographic maps, these ancient shore features have been defined. This contribution replaces the old interpretation of a dissected peneplain in southern New England by suggesting a series of giant steps made by wave erosion. Mr. Barrell has not yet prepared for final publication the results of these elaborate studies, but a brief statement has appeared in the *Journal* of the Washington Academy of Sciences. Pending the final report, the new interpretation of the land forms bordering our eastern coast should be tested by other observers.

Physical Geography and Stratigraphy.—Through a careful analysis of the habits of streams and of waves in the deposition of gravels Herbert E. Gregory has made an important contribution to stratigraphy. Various observers have estimated that from 100 to 300 cubic miles of material are carried each century by streams from the lands to the sea. Murray has even estimated the amount as high as 370 cubic miles per century. More conservative figures, based on a careful study of the work of rivers in the United States, put the amount at 110 cubic miles per century. According to various estimates the waves remove about 2.24 cubic miles per century, which means that the rivers are approximately 50 times as effective as waves in paring down the continents. This material is in part available as gravels to be distributed either on the lowlands in broad river valleys, or just off shore in the shallow waters near the coast. Gregory has had the advantage of studying the braided channels in the desert region of the Navajo Reservation, and has described with care the ways in which streams deposit gravels on their flood plains. A series of lenses are developed 10 to 100 ft. long and three to 20 ft. wide, with gentle slopes downstream. These lenses are roughly parallel, and form a network, in

the meshes of which are the finer materials carried by the stream. "The pattern woven by these sets of bars is a net stretched in the direction of stream flow. In the meshes of the net are rows of sands and muds of various textures. Between floods the net appears to migrate downstream without substantially altering its pattern." Gregory points out that by the blending of several broad river bottoms an extensive or widespread deposit of such material may be developed, and by his careful description of these present-day processes guides one in the interpretation of certain ancient deposits which have now been consolidated into firmer rocks as conglomerates.

After an analysis of the work accomplished along coasts of various types, a study of maps, and the evidence from soundings in the shallow water zone bordering the coast, Gregory has concluded that it would be very exceptional if a marine conglomerate exceeded 15 miles in breadth or 100 ft. in thickness. In comparing the work of vigorous streams in carrying and distributing gravel he concludes that in a single cycle such streams would carry gravels three to 300 times farther than waves, and distribute such material much more widely. It therefore would follow that "inland fluviatile gravels and their ancient representatives, the conglomerates, are, in general, much thicker and many times greater in extent than are those of marine origin."

From these studies it seems appropriate to emphasize that at the present time the lands of the earth are favorably disposed for the formation of large quantities of gravel. Youthful and mature landscapes are common. There are vigorous rivers, and many places where waves are working vigorously. The great continental platforms are for the most part above the sea. The submerged margins give the continental shelves of to-day. Rivers are distributing gravels over the lands, and examples may be given where such gravels are somewhat widespread. These studies are not only significant in reading the history of modern rivers and modern coast lines, but also in the interpretive description of ancient landscapes.

Coral Reefs.—During the year a report has appeared on the study of coral reefs, conducted by W. M. Davis, in which he agrees with the earlier theories of Darwin that those reefs which he visited in the southern Pacific must be explained by subsidence, a theory invented by Darwin 25 years ago. R. A. Daly has worked out with great care the theory of glacial control for the explanation of periods of coral growth and quiescence, and for the apparent subsidence of the coral islands, also for the subsidence of the lands about which the coral reefs are found. Daly emphasizes it is not alone the withdrawal of the sea waters for the formation of the great ice caps, and the return of those waters on the melting of the continental glaciers, that is of significance in this problem, for the chilling of the waters during the glacial period he believes must have caused the death of corals in large portions of the sea, and the changes in climate which characterized the Pleistocene period must have alternately suppressed or hastened the growth of the reef-building corals. This factor, associated with alternate withdrawal and return of the waters, constitutes the glacial-control theory as elaborated by Daly. (See also *Dynamical and Structural Geology, supra.*)

Other Investigations.—Many minor contributions to physiographic science have been made during the year, of which only a few can be mentioned. The present writer has continued a detailed study of the San Juan region of southwestern Colorado. William C. Alden has been at work on the glacial drift of the Mississippi Valley. E. T. Hancock has given the history of a portion of Yampa River, Colorado, and discusses its possible bearing on that of Green River; he concludes that those rivers, so often referred to as antecedent, are probably not antecedent streams.

OCEANOGRAPHY

G. W. Littlehales

Observations in the American Atlantic.—The International Ice Observation and Ice Patrol Service in

the North Atlantic, employing the vessels of the U. S. Coast Guard under an arrangement by which the cost is shared proportionately by the nations participating in the London Conference of 1913, is engaged in gathering an important accumulation of oceanographical and meteorological observations, coördinately with the primary duties of ascertaining the locations and progressive movements of the limiting lines of the regions in which icebergs and field ice exist in the vicinity of the Grand Bank of Newfoundland and the dissemination of the information so ascertained for the guidance and warning of navigators. Year by year, observations at recorded times, extending from the surface to the bottom, are made in well determined geographical positions throughout the patrolled region for determining the temperature and salinity of the water by readings in series at definite depths, the direction and rate of movement of the waters in the different depths, the collection and preservation of plankton and of samples of the water from ascertained depths, and in recording the state of the weather and the sea together with the barometric pressure, the humidity and the temperature of the air. These observations are published annually in the bulletins of the U. S. Coast Guard. Closely related to these investigations from the standpoint of the advancement of oceanography, is the accumulation of observations resulting from the annual returns of the schooner *Grampus* to the Gulf of Maine and its vicinity, for the study of the correlation between physical oceanography and biological oceanography in these waters, under the joint auspices of the U. S. Bureau of Fisheries and the Museum of Comparative Zoölogy of Harvard University. In pursuing the inquiries incident to these researches, the naturalists discovered extensive banks of scallops off the coasts of the states of New York, New Jersey and Maryland, which promise to be the origin of new fisheries of considerable economic importance.

Plankton Investigations.—The newer methods developed by Lohmann have made it possible to study the nature and distribution of even the most minute of the drifting organisms of the sea. A centrifugal apparatus is used consisting of conical vials containing the water samples, which are revolved at a speed of 1,500 revolutions per minute. Even the smallest organisms are thus projected into the apex of the vial, from which they can be removed for examination under the microscope. Their diameter averages two to 15 microns. Their vertical distribution is dependent on the range of the penetration of light into the sea. Consequently the great majority live near the surface, and they are 50 times as numerous in the shallow coastal waters as on the open ocean. Their number is also much greater in cooler than in warmer waters. The economic significance of the facts disclosed by these investigations lies in the dependence of fishes upon the plankton organisms for food.

Geological Oceanography.—Geologists of eminence, recognizing the illuminating influences of oceanography in geological interpretation, have lately been at the service of oceanography in the elucidation of geological problems. Prof. W. M. Davis has made distant voyages to Oceania and Australia, and is led to conclude by his study of the shore lines of the islands visited and of the coast line of Queensland, that coral reefs and atolls owe their origin to the subsidence of the bottom of the ocean (see also *Dynamical and Structural Geology, supra*). Dr. T. Wayland Vaughan finds that, in the region of Key West and Tortugas, the waters of the ocean flow to the westward in a direction opposite to that of the Gulf Stream, and that the form of the Marquesas and Tortugas and the physiography of the southern Florida limestone region has been determined by the long prevalence of such a current with the added influence of the prevailing winds. Under the direction of the Geological Survey and the Carnegie Institution, he has continued his work upon the formation of coral and calcareous sediments and has shown experimentally that oölite forms very rapidly in the limestone mud which is precipitated by bacterial action from sea water, and

he has enlisted the coöperation of geologists in further studies of suboceanic physiography and sedimentation phenomena.

The explorations of the recently returned Mawson Australian Antarctic Expedition have given physiographic evidence of the existence in past time of a land-bridge between Tasmania and Antarctica. The paleontological evidence of the existence of this connection is summarized in the *Proceedings of the Linnean Society* (London, Session 124).

CARTOGRAPHY

W. L. G. Joerg

International Map of the World.—Since the publication of the 16 sheets noted in issues of the Year Book for 1912 (p. 621) and 1913 (p. 639), the following seven sheets have been issued: North L-31 (Lyons), North K-33 (Rome), North J-30 (Valencia), North J-10 (San Francisco Bay), North H-35 (Alexandria), North E-43 (Bombay), South F-36 (Inhambane). Sheet North J-10 is the second sheet to appear of a part of the United States. It covers west-central California between 40° and 36° N. and west of 120° W. With its physical coloring it brings out admirably the contrast between the Great Valley of California and the enclosing mountains of the Coast and Sierra Nevada ranges.

Maps of Europe in 1:1,000,000.—Although the European War has jeopardized the international coöperation so essential to the progress of the International Map of the World, it has stimulated the production of similar maps for Europe. Under the direction of the General Staff, the Royal Geographical Society of London has prepared a map of Europe on the scale of 1:1,000,000, which is similar in scope to the International Map. The limits and designation of the sheets and the content are the same, except that, for the time being, relief is shown by contours only, without physical coloring. No less than 12 sheets have already appeared: N-32 (Hamburg), N-33 (Berlin), N-34 (Warsaw), M-32 (Frankfort), M-33 (Vienna), M-34 (Cracow), M-35 (Jitomir), L-32 (Milan), L-33 (Triest), L-34 (Budapest), K-33 (Rome), K-34 (Sofia). It is intended to expand the map to include Asia Minor and the Near East.

Similarly, the French Service Géographique de l'Armée is issuing a map of Europe on the scale of 1:1,000,000. While the sheets cover the same unit of area as those of the International Map, their limits are different, as they are based on Paris and not Greenwich as the initial meridian. Nine sheets have been published to date: Berlin, Danzig, Warsaw, Munich, Vienna, Lemberg, Milan, Budapest, Bucharest.

State Base Maps.—To the 26 states represented in the valuable series of outline maps on the scale of 1:500,000 in course of publication by the U. S. Geological Survey, mentioned in the Year Book for 1914 (p. 606), the following six have been added: Kentucky, Montana, New Hampshire (with Vermont), Oregon, Virginia, West Virginia. Fourteen of these 32 states are represented in a new series of index maps in course of publication by the Survey to show the location and extent of its published topographic sheets and geologic folios. The new index maps are reduced to the scale of 1:1,000,000 from the state base maps and thus make available for certain sections of the country outline maps on the millionth scale prior to the publication of the International Map. The new series will ultimately include all the states and will supersede the old series on the scale of 1:2,500,000.

A large outline map of Alaska in 1:1,500,000 has also been published by the Survey.

South American Maps.—In the field of South American exploration possibly the most interesting map is the official survey of the Rio Roosevelt (in sections, 1:400,000, *Geogr. Jour.*, Feb., 1915; reduction of river as a whole to 1:2,000,000 in *Bull. Amer. Geogr. Soc.*, May, 1915) by the Brazilian army officers, Lieut. J. S. Lyra and Pyrineos de Sousa. Hamilton Rice's survey of the rivers draining from the Colombian Andes eastward into the Orinoco and the Rio Negro are incorporated on a map on the scale of 1:1,000,000 (*Geogr. Jour.*, Aug., 1914).

The most important contribution of the year to the cartography of South America are the maps accompanying Bailey Willis' *Northern Patagonia* (Scribners, New York, 1914). Under his able direction the Comisión de Estudios Hidrológicos made a survey across Argentina along the forty-first parallel. This is laid down in eight topographic sheets in 1:200,000, similar in style to those of the U. S. Geological Survey, and 12 land-classification maps of the Andean area showing the vegetational formations of the area.

Maps of Africa.—An important set of maps dealing with various phases of the geography of Africa as a whole accompanies an article by Sir Harry H. Johnston in the *Geographical Journal* (April, 1915). The six most valuable in the set of nine maps represent the following: (1) maximum extent of the regions which can be colonized by the white race; (2) distribution of the native races; (3) projected and existing railroads, and water routes navigable at all seasons; (4) mineral, vegetable, and animal products; (5) dominant languages; (6) distribution of diseases.

Physical Maps.—As the physical map (*i. e.*, showing relief in altitude tints) is the fundamental cartographic representation of a region, the appearance of maps of this nature on a larger scale than heretofore available of the regions concerned is always of importance. Such is the case with a map of Kamerun and Togo, 1:2,000,000 (*Mitt. aus den Deutschen Schutzgeb.*, xxvi, 1913, no. 4); a map of the highland of Iran (Persia, Afghanistan, Baluchistan), 1:2,000,000, in four sheets (Survey of India, Calcutta); and a map of the Russian Empire, 1:12,600,000 (Colonization Bureau of the Department of Agriculture, Petrograd).

Educational Maps.—Two distinctive educational publications are worthy of note. The one is a set of wall atlases, for each continent and for the British Isles, by J. F. Unstead and E. G. R. Taylor (George Philip & Son, London). Each set contains a map showing relief, temperature, summer and winter climate, vegetation, economic features, density of population, communications, and political divisions. The maps contain only essentials and are boldly drawn for legibility at a distance, making them admirably suited for teaching purposes.

An ingenious device, similar in scope, are *Philips' Synthetic Maps* by E. G. R. Taylor (Geo. Philip & Son, London). By means of transparent maps, each showing temperature, climate, vegetation, or communications, and two basal, non-transparent maps showing relief and density of population, it is possible, by various combinations of superimposition, to bring out at a glance all the manifold causal correlations of geography. There is a set for each continent and the British Isles; a set costs but sixpence.

Systematic Atlas of Europe.—A notable publication in the field of geographic method is Friederichsen's *Methodischer Atlas zur Landerkunde von Europa* (Hahnsche Buchhandlung, Hanover). It fills a long-felt want in that it presents systematically all phases of the geography of a given region. Twenty-four small maps are devoted to each of the four regions published so far (Russia and Scandinavia, in Section 1; the British Isles and France, in Section 2).

Census Atlas.—The *Statistical Atlas for the Thirteenth Census* (Washington, 1914) contains the usual density of population maps for each decade. An innovation on the map for 1910 is the lowering of the population grade of the cities not included in the calculation from 8,000 to 2,500. There is a profusion of state cartograms representing in graphic form a great variety of statistical data.

Andrée's Handatlas.—A new (sixth) edition of *Andrée's Handatlas*, one of the two or three best general atlases extant, has been published (Velhagen & Klasing, Leipzig, 1914). The maps are characterized by legibility and pleasing appearance, besides being of scientific merit. There are excellent maps of Great Britain and France in 1:1,000,000 and of the United States in 1:5,000,000. An especially valuable feature are the physical maps of Europe, 1:12,000,000, of Central Europe, 1:3,500,000, and of Africa, 1:20,000,000.

EXPLORATION AND GEOGRAPHICAL RESEARCH

CYRUS C. ADAMS

Effect of the European War on Geographical Enterprise.—Nearly all field research by countries engaged in the war has been abandoned. All surveying, mapping and other scientific work in the colonies of the belligerents is at a standstill. The Austrian Antarctic Expedition which was to sail for the Weddell Sea late in 1914, under the leadership of Dr. König, whose preparations were far advanced, was given up. The projected Anglo-Swedish Antarctic Expedition, which was to sail in August, 1915, under the leadership of Prof. Otto Nordenskjöld has been postponed until the end of the war. Prof. F. Machatschek, of the University of Vienna, who was making geomorphological studies in Russian Turkestan, was arrested by the Russians and long detained before he was permitted to return home. The effects upon a large number of geographical societies and publications have been disastrous. Most of the periodicals issued by French societies have been suspended. The house of the Paris Geographical Society is at present a home for destitute families of soldiers, and its superior publication, *La Géographie*, is, for the time being, a quarterly instead of a monthly. In Germany nearly all publications devoted to colonial news and discussion have been suspended, for the present, as communication with the German colonies has been entirely cut off. Many editors, other workers and members of geographical and allied societies are at the front and are supplying their full quota of casualties. The German-Austrian Alpine Union, which numbers many thousands of members, announced on Feb. 28 that, up to that time, 823 members had been killed in battle.

It is a noteworthy fact that in America and in Europe the preparation or the revision of a large number of geographical textbooks is being deferred because publishers are loth to make a great many maps which may have to be extensively revised at the end of the war.

Arctic Exploration.—In pioneer field work, rather more has been done in the Arctic than in other regions. The most important event was the reappearance of Vilhjamur Stefansson with a fine record of effort and achievement. He had been given up for dead (*A. Y. B.*, 1914, pp. 610, 662) by most Arctic travelers, who argued that the ice drift, north of Alaska, had probably taken him far to the west, that in the winter night, seals would be inaccessible on the frozen sea and there would be no bears where seals could not be obtained; therefore the explorer could not replenish his food supply. The fact was that the ice-drift took Stefansson east towards Banks Island, where he had announced his intention of wintering; and on the way there he stored up so much food that he had to abandon two tons of it when the ice broke up in a gale before he reached Banks Island. He landed within 30 miles of the place where he had said he would try to winter; but his own vessel did not even start, as he had directed, for his proposed winter camp and the whalers did not come within 100 miles of it; so the report was widely spread that he had undoubtedly perished.

The YEAR BOOK for 1914 (p. 611) described his start on this expedition from Martin Point, Alaska, on March 22, 1914, over the sea ice to the north. On April 16 he sent back all of his men excepting Storkensen and Andreasen. He had a dog team, a sledge convertible into a boat, food for men and dogs for 40 days, and 360 cartridges for two rifles. The easterly drift was incessant, but he kept a fairly true north course till April 22, when his position was about 73° N. and 140° W. He was looking for any islands that might be found in Beaufort Sea along the route he was traversing. He was on short rations before he found seal and bear, but from that time he had a great abundance of food and plenty of oil for fuel until he reappeared at Herschel Island in the summer of 1915. On his way north, he found the edge of the continental shelf, where the shallow waters drop to oceanic depths, about 40 miles north of Alaska. He made

other soundings of over 2,000 ft.; and, approaching Banks Island, he took soundings every two or three miles. This work seems to indicate, he says, that the sea bottom rises in at least three terraces towards Banks Island. "In some parts the bottom seems either hilly or cut by channels."

The party landed on Banks Island on June 26, 1914, some 30 miles south of Cape Prince Alfred, 96 days after they had left Martin Point, Alaska. They had traveled not over 700 miles on the sea. Stefansson spent some time killing and drying meat and then proceeded with pack dogs to Cape Kellett, where he accumulated a large additional supply of food. During the winter darkness, the explorer and one of the Eskimos he found at Kellett made a 400-mile round trip to the southeast of Banks Island and Victoria Land in search of the Eskimos who usually live there. They had gone elsewhere, however, and so he failed to get the dogs he needed for his spring work. He had only 17 dogs left, barely enough for two small teams.

Early in February, 1915, he started north again, intending to take to the sea ice to the north and northwest of Cape Prince Patrick, Banks Island, in search of new land. His progress over the sea ice was slow, owing to thick fogs, soft snow and much open water, and he did not reach lat. 75° N. till April 26. Skirting the west coast of Prince Patrick Island, he charted a stretch of coastline that was not covered by the surveys of McClintock and Mecham in the middle of the last century. Stefansson's survey completes the charting of the entire coastline of this large island. Pushing on to the northwest, new land was sighted to the northeast on the morning of June 18. Stefansson writes:

> Our camp was pitched at 77° 56′ N. and we landed next day on the land about 14 miles away near 78° N. and 117° W. We saw about 100 miles of coastline running somewhat south of east from the landing place, but mountains were seen for at least 50 miles further east and, from a height of 2,000 ft., 20 miles inward, still higher hills were seen in all directions from north to east at a distance estimated at over 50 miles. The land is therefore of considerable size. It is low where we first landed, but becomes higher and more rugged eastward.

Stefansson plans another journey in 1916 into Beaufort Sea to make thorough explorations in the new land already discovered. He chartered the *Polar Bear* to carry supplies from Herschel Island and land them next season at a more northern base for his work, either on Banks Island or Prince Patrick Island. Stefansson has established his reputation as one of the ablest, most resourceful and most fruitful investigators of the Polar regions and their inhabitants. His perfect understanding of nature and life in the Arctic has given him uncommon fitness to live and labor among the conditions that are met there. (See also IV, *Canada.*)

A letter from Donald B. MacMillan, leader of the Crocker Land expedition, printed on June 7, said that he and one of his men reached the neighborhood of the supposed location of Crocker Land on April 23, 1914. They found no land. They returned to Cape Thomas Hubbard on April 28 and arrived on May 21 at Etah on the Greenland coast.

Dr. W. S. Bruce, the well known Polar explorer who discovered Coats Land in the Antarctic, went to Spitzbergen in 1914 to make a hydrographic survey of Stor Fiord. The heavy pack ice made it impossible to enter the fiord and he found the west coast of Spitzbergen so heavily packed with ice that he could not approach the coast. He was thus prevented from carrying out his proposed researches.

Commander Vilkitski, who discovered Nicholas II Land, to the north of Siberia, in 1914, was able to make some additional observations in that region in 1915, though the ice conditions were very difficult. He demonstrated that Nicholas II Land has a width of 100 miles and extends to 77° 50′ N., 90° W. The strait between the island and Cape Chelyuskin is only 30 miles wide. He communicated by wireless with Captain Sverdrup, whose vessel was imprisoned in the ice on the same coast. Both expeditions returned safely to Europe in the fall. Vilkitski succeeded in making the Northeast Passage. Entering the Arctic Ocean to the west of Bering Sea in 1914 he made the continuous journey to Archangel, Russia's northern port on the White Sea. He

is the second to make the Northeast Passage, Baron Nordenskjö having been the first, in 1878-1879, sailing from west to east.

Antarctic Exploration.—A dispatch from Sir Ernest Shackelton, whose party with their ship, the *Endurance*, spent the Antarctic winter of 1914 at South Georgia, said, under date of Jan. 11, that the *Endurance* was to sail for the Antarctic continent on that day. They had, however, been so greatly delayed by unfavorable ice that he did not expect to begin his land journey from Weddell Sea to Ross Sea until next season. This doubtless means that, on account of obstructions lengthening the voyage from South Georgia to the coast of Prince Luitpold Land, the part of the Antarctic continent discovered by Filchner in 1912, Shackelton felt that he could safely announce that he would not leave that coast for his journey over the continent to Ross Sea until October, 1915.

Africa.—While the great war has been waging in Europe, skilled German artisans on Lake Tanganyika have been assembling the pieces that together will make the steamer *Götzen*, the first of the three steamers that are planned to connect the German railroad from the Indian Ocean with the Belgian railroad and Congo transportation system to the Atlantic. These steamers will be the connecting link to join the two great land and transportation systems and will complete communications, by rail and river, across tropical Africa. The *Götzen* was built at Papenburg on the Ems River just before the war, and as soon as it was proven that she was in fine working order, she was taken to pieces for shipment to Africa and, piecemeal, she was carried over the railroad from Daressalam to Lake Tanganyika, where she was put together and launched. She is 219 ft. long, has a steel hull, twin propellers, cabins, dining and smoking rooms, both for first- and second-class passengers, and large freight capacity. One of her sister ships has been built but is still in Germany.

North America.—The U. S. Coast and Geodetic Survey began work in June on an arc of primary triangulation to extend northwesterly from the 39th-parallel triangulation near Great Salt Lake and connect with the northern end of the California-Washington arc. This triangulation will close another large loop and will give a much needed primary control to the mountainous regions of southern Idaho and eastern Oregon. The work will provide facilities for making surveys and maps of these mountain districts of a higher degree of accuracy than would otherwise be possible.

Secretary of Commerce Redfield announced in January that a practicable, navigable channel from Bering Sea into the mouth of the Kuskokwim River, Alaska, had been discovered by Captain Lukens of the Coast and Geodetic Survey. This is the second largest river in Alaska. It is nine miles wide at its mouth and navigable for over 600 miles. The submerged flats of the delta extend 100 miles out to sea. It was through this uncharted delta that the survey steamer *Yukon* made the discovery of the channel which means much to the commerce of this part of Alaska. In making the survey, Captain Lukens reports that he took 14,256 soundings covering an area of over 100 sq. miles. When the Coast and Geodetic Survey chart showing the newly discovered channel is issued, it will be possible for steamship companies to send vessels up the Kuskokwim and thus initiate the development of the mining, fishing and agricultural resources of that region.

E. O. Hovey, who has recently revisited the active volcanoes of Martinique, St. Vincent and Guadeloupe, says that the new cone of Mt. Pelé, which stands as the monument of the great eruption of 1902-03, nearly fills the old crater and rises some 500 ft. above it. Considerable steam is still issuing from the fissures. The activity of the volcano has greatly and continuously diminished since those outbursts and apparently there is no present danger of recrudescence. Vegetation has reëstablished itself to the summit on the east or windward side and even the forest is beginning to reassert itself. Sugar plantations on the west side of Mt. Pelé have been reinstated as far as the Roxelane River within the original zone of annihilation. The ruined city of St.

Pierre now has a population of about 200 people.

South America.—Major P. H. Fawcett announced in the *Geographical Journal* for March, 1915, his discovery in the previous year of forest tribes in Bolivia estimated to number 100,000 souls, who had never before seen a white man. He does not indicate the exact location of these people but intimates that after the war, British scientific societies may combine to explore this region. He says that after three weeks' journey through dense forest his party encountered, at last, the communal dwellings of a very considerable population. The dwellings each measure about 100 ft. in diameter by 70 ft. in height and are conical in form. Each of the 20 or more families living in a dwelling has its own fire, and each has a platform on which is stored the family share of the annual harvest. The first tribe met numbers some 3,000 souls, and about them live three other tribes numbering some 5,000. All four tribes are at war with each other and not one of them had ever before seen a white man. They are sufficiently advanced to distinguish between stars and planets. The tribes are anthropophagous and are in a state of perpetual hostility. Except in one or two words, their language resembles nothing heretofore known. He gives an account of the tribes that were visited, their ceremonies, medicine men, food and the life of the forest about them and adds: "The full area of this unknown region must contain at least 100,000 savages."

The joint commission of Bolivia and Brazil concluded the exploration and delimitation of the frontier line of the two countries along the Abuna, Rapirran and Madeira rivers. One of the notable features of the work was the utilization of wireless telegraphic time signals, from the powerful wireless station at Porto Velho, to determine longitudes further west. Porto Velho, some 1,500 miles from the Atlantic, stands at the head of navigation on the Madeira River. The aerial wire was always stretched across as high as possible between two or three convenient trees. The wireless station was erected at every camp and time signals were received each night from Porto Velho, thus enabling the party to establish the longitudes of their camping places, which were used as controlling points between which the river traverses were adjusted. Commander Edwards says: "I believe our wireless work to be the pioneer in regions of dense forests, and we have proved the utility and feasibility of wireless determinations of longitude over comparatively long distances under most unfavorable climatic conditions."

Asia.—Volume IV of the *Records of India*, recently published in Calcutta, contains a summary of the work of the Abor expedition which has, at last, provided proof that the Sanpo River of Tibet and the Dihang of Assam are one and the same river, forming the upper course of the Brahmaputra. This fact has been accepted for many years on the authority of Kinthup, an humble Indian traveler, though his credibility was long doubted by many. The *Record* says: "His account has been confirmed in the most remarkable manner, and we are now able to establish Kinthup's claim to honorable record in the annals of the Survey of India, which he served with such zeal and devotion to duty."

XXIV. CHEMISTRY AND PHYSICS

CHEMISTRY

INORGANIC AND PHYSICAL CHEMISTRY

ARTHUR WESLEY BROWNE

Water and the Hydrates.—The saponification of methyl acetate and of methyl formate (1) by water alone, (2) by aqueous solutions of nonhydrated salts, and (3) by aqueous solutions of strongly hydrated salts, has been studied by H. C. Jones and J. E. L. Holmes in order to ascertain whether or not there is a detectable chemical difference between "free water" and "combined water." It was found that certain salts of calcium, strontium, barium, and magnesium, which are strongly hydrated in solution, produce the greatest increase in the velocity of the reaction. To account for the greater chemical activity of combined water the authors venture the suggestion that "combined water is more highly ionized than free water." A detailed investigation of numerous compounds containing two molecules of water of crystallization has been prosecuted by I. Guareschi. By compressing arsine with water at 0°, a crystalline solid, of which the formula was calculated to be $AsH_3.6H_2O$, was obtained by de Forcrand. The pressure temperature curve of this hydrate was measured up to 28.3°, at which temperature the curve was found to intersect the curve for arsine itself.

Hydrogen Peroxide.—The behavior of hydrogen peroxide toward various salts has been investigated by P. V. Kazanetzkii. Treatment of cesium carbonate with 30 per cent. hydrogen peroxide, for example, was found to yield the crystalline solid $Cs_2CO_3.2H_2O_2$. Carbonates of the other alkali metals behave similarly. By dissolving basic magnesium carbonate in hydrogen peroxide a compound of the formula $3MgO_2.MgCO_3.H_2O_2$ may be obtained. The increase in the solubility of various salts in water effected by addition of hydrogen peroxide may be explained by the formation of perhydrates, in which hydrogen peroxide behaves similarly to water of hydration. J. D'Ans and A. Kneip have prepared performic acid, $HCO.O_2H$, of high concentration by the action of pure hydrogen peroxide upon formic acid in the presence of sulphuric acid. Peracetic acid, $CH_3.CO.O_2H$, in concentrated form was found to be most readily obtainable by the interaction of acetic anhydride and pure hydrogen peroxide.

Hydrogen.—The solubility of hydrogen in the solid alloys of palladium with gold, silver, and platinum has been determined by A. Sieverts, E. Jurisch, and A. Metz, over a range of temperatures from 138° to 820° C., and of pressures up to one atmosphere. The amount of gas absorbed in the case of each of the three series of alloys was found to be approximately proportional to the square root of the pressure. The evidence is considered to indicate the formation of true ternary solid solutions between the hydrogen and the binary alloys. V. Ipat'ev and A. K. Starynkevitch have found that metallic mercury is deposited from a saturated solution of mercurous nitrate by the action of hydrogen gas at 225° C. under a pressure of 130 atmospheres, and from mercuric nitrate at 240°-250° under 120 atmospheres. Under suitable conditions both cadmium and zinc were displaced from their salts by hydrogen. Continuing his earlier researches (*A. Y. B.*, 1912, p. 629), I. Langmuir has further studied the conditions under which the dissociation of hydrogen into atoms takes place. The active modification is

formed when the gas at low pressures is brought into contact with metallic wires at temperatures above 1,300°K. It can react with oxygen at room temperature, or with many reducible substances, and can dissolve in metals, such as platinum. The dissociation of the hydrogen is not considered to occur in the space around the wire, nor by the impact of molecules against its surface, but takes place only among the hydrogen molecules that have been absorbed by the metal of the wire.

Nitrogen.—W. Jevons has obtained the band spectrum characteristic of boron nitride as a result of the interaction of active nitrogen and boron trichloride or methyl borate. A. Koenig has effected the electrical activation of nitrogen by means of the high-tension direct-current arc. The gas after this treatment can react with ethylene, acteylene, pentane, nitric oxide, and metals, but not with hydrogen, methane, water, oxygen, or ozone. It is now conceded by R. J. Strutt that the purest nitrogen will not give more than a little active nitrogen when subjected to the action of the electric discharge, but on the other hand it is maintained by him that the presence of oxygen or an oxygen compound is not essential to the production of a good yield, since the presence of small amounts of almost any foreign gas will greatly increase the yield of active nitrogen. A curious luminous explosive phenomenon was observed in oxygen-free, rarefied nitrogen by J. Kowalski subsequent to an interruption of the current. This was attributed to the decomposition of an explosive nitride of mercury. F. Haber has made a study of the ammonia equilibrium at ordinary pressures, and has redetermined this equilibrium under a pressure of 30 atmospheres. Haber and Tamaru have determined the heat of formation of ammonia at high temperatures. W. Schlenk and Th. Weichselfelder have succeeded in preparing and analyzing the very explosive sodium derivative of hydrazine, NH_2. $NHNa$, obtained by interaction of sodium and hydrazine in an atmosphere of nitrogen. By electrochemical oxidation of hydrazine sulphate in the presence of sulphuric acid, J. W. Turrentine and J. M. Olin have obtained hydronitric acid. Small amounts of hydrazine were obtained by electrochemical oxidation of ammonium hydroxide solutions that contained sodium chloride and glue. Turrentine has prepared the new compound hydrazine diperchlorate. By working with nonaqueous solutions L. Chugaev and M. Grigoryev have been able to obtain complex compounds containing both platinum and hydrazine. J. Lifschitz has effected the synthesis of a pentazole compound containing a group of five nitrogen atoms linked together by cautiously warming cyanotetrazole in alcoholic solution with hydrazine hydrate. As a product of a series of reactions a silver salt apparently of the composition represented by the formula AgN_5 was obtained.

Nonaqueous Solutions.—E. C. Franklin has investigated the behavior of potassium amide toward various metallic amides in liquid ammonia solution (see *A. Y. B.*, 1913, p. 645), and has succeeded in obtaining potassium ammonoargenate, potassium ammonobarate, potassium ammonostrontiate, potassium ammonocalciate, and potassium ammonosodate. He has also prepared two ammonobasic iodides of aluminium, as well as numerous metallic salts of ammono acids, and of acid ammono esters. The reaction between potassium amide and certain salts of cadmium, nickel, and chromium in liquid ammonia has been studied by G. S. Bohart. The molecular conductivity of acetylene in liquid ammonia has been determined by M. Skossarewsky, who also electrolyzed a solution of primary sodium acetylide, C_2HNa, in ammonia. Metallic sodium was deposited upon the cathode, and a number of complexes were formed at the anode. T. W. B. Welsh has electrolyzed a solution of sodium hydrazide in anhydrous hydrazine, and with H. J. Broderson has studied the behavior of anhydrous hydrazine as a solvent toward a large number of substances. It was found that reactions take place in hydrazine that are similar to those in water or in ammonia. In the seventh of his researches upon reactions in nonaqueous solutions A.

Naumann has investigated the solubility of numerous substances in benzonitrile, and various reactions that take place in this solvent. The dielectric constants of 21 organic solvents at their melting or boiling points have been determined by J. D. Cauwood and W. E. S. Turner.

Carbon.—As a result of their study of the heats of combustion of graphite, diamond, and amorphous carbon, W. A. Roth and H. Wallasch conclude that two varieties of graphite may now with certainty be differentiated: the *alpha* variety, including the natural graphites, which were probably formed at moderate temperature and high pressure; the *beta* variety, including all artificial graphites, formed at high temperature and low pressure. The fact that diamond has a higher heat of combustion than graphite has been confirmed, and the conclusion is reached that pure, thermally well defined amorphous carbon cannot be prepared. The thermal properties of commercial carbon dioxide at low temperatures have been described by C. F. Jenkin and D. R. Pye. The general assumption that aqueous solutions of carbon dioxide contain the hydrate H_2CO_3 is seriously questioned by E. Wilke. Carbonic acid was found to be a much stronger acid in salt solutions than in pure aqueous solution. It is concluded that while in salt solutions H_2CO_3 may exist, in aqueous solutions there is probably a higher hydrate, such as $C(OH)_4$. The molecular weight of sodium carbonate and the atomic weight of carbon referred to silver and bromine have been determined by T. W. Richards and C. R. Hoover. G. N. Lewis and W. N. Lacey have studied the equilibrium between carbon oxysulphide, carbon monoxide, and sulphur. It was found that "when carbon monoxide and sulphur are heated together at 250° to 300° C., carbon oxysulphide, carbon dioxide, carbon disulphide, and carbon monosulphide are formed by the reactions: $CO+S=COS$; $2COS=CO_2+CS_2$; $CS_2=CS+S$." The action of aluminium and certain other metals upon such chlorides of carbon as CCl_4, C_2Cl_6, C_6Cl_6, and $C_{10}Cl_8$ was investigated by E. V. Zappi. The carbon obtained by the action of aluminium upon CCl_4 was found to contain 12 atoms per molecule. That the photolysis of oxalic acid involves initial decomposition into carbon dioxide and formic acid, with subsequent change of the latter to carbon monoxide and water by rays of long wave length, and to carbon dioxide and hydrogen by rays of short wave length, has been shown by D. Berthelot. This seems to indicate that radiant energy is of a lower form than thermal energy, and that frequency of vibration in the former corresponds to temperature in the latter.

Silicon.—The preparation of the chlorides $SiCl_4$, Si_2Cl_6, and Si_3Cl_8 was accomplished by G. Martin, who brought chlorine into contact with 50 per cent. ferrosilicon. It is assumed by the investigator, in explanation of these results, that free silicon and the metallic silicides contain silicon atoms directly united in chains. The preparation of silico-oxalic acids has also been made the subject of a research by Martin, who has moreover discussed in still another article the constitution of silica and of these acids.

Lead.—Considerable interest has recently been taken in the atomic weight of lead obtained from various sources. T. W. Richards and M. E. Lembert have determined the atomic weight of lead of radioactive origin obtained from different localities, with the amazing result that values lower than that of ordinary lead were invariably obtained. For the lead obtained from pitchblende O. Hönigschmid and Mlle. St. Horowitz obtained a value 0.4 lower than that of ordinary lead. F. Soddy and H. Hyman have made a preliminary examination of the lead from Ceylon thorite, while G. P. Baxter, F. L. Grover, and T. Thorvaldson have determined the atomic weight of lead obtained from ten widely distributed sources. Some indication of the existence of an allotropic modification of lead has been obtained by H. Heller, who observed that lead electrodes slowly change, in a nitric acid solution of lead acetate, into a gray, powder-like substance.

The Rare Earths.—L. M. Dennis and B. J. Lemon have effected by

electrolysis the separation of lanthanum from neodymium, praseodymium, lanthanum, and samarium, as well as from praseodymium alone; and the separation of erbium from yttrium. Dennis and Van der Meulen have subjected various solutions of the rare earths to fractional electrolysis, with the result that the hydroxides of the metals are precipitated in the order of the basicities of the earths. Certain derivatives of perceric oxide have been described by C. C. Meloche. A revision of the atomic weight of praseodymium has been made by G. P. Baxter and O. J. Stewart, on the basis of their analysis of the chloride of this metal.

Halogen Compounds.—The vapor pressures of the halogen hydrides and of hydrogen sulphide have been measured at low temperatures by O. Maass and D. McIntosh. The densities and degrees of dissociation of the saturated vapors of the ammonium halides and of phosphorus penta-chloride have been determined by A. Smith and R. H. Lombard. A. Gutbier has described various compounds of iridium chloride with organic bases, and in collaboration with his associates has prepared numerous hexachloroiridates, hexachlorosmates, and pentachlororuthenates. A. Rosenheim and E. Dehn have studied the cyanides of tungsten and molybdenum. An approximate determination of the boiling points of the alkali halides has been made by L. H. Borgström. Ammonium dichloroiodide, NH_4Cl_2I, and ammonium chlorobromoiodide, NH_4ClBrI, have been prepared by F. D. Chattaway by the action under proper conditions of the respective halogens upon ammonium chloride. The activation of chlorates by formic acid has been noted by K. A. Hofmann and K. Schumpelt (see *A. Y. B.*, 1913, p. 647). This influence of formic acid is not attributable to its acidity, but to the property, possessed also by other reducing activators, of acting upon an oxidizing agent to form a more actively oxidizing substance.

Miscellaneous.—A. Stock has continued his interesting researches upon the hydrides of boron (*A. Y. B.*, 1913, p. 646). With his associates E. Kuss and O. Priess he has studied the action of chlorine and bromine upon the hydrides B_2H_6 and $B_{10}H_{14}$, and has ascertained the conditions under which chlorination and bromination will take place. The derivative B_2H_5Cl is apparently a spontaneously inflammable gas. The corresponding bromine compound, B_2H_5Br, was isolated and carefully studied. A. C. G. Egerton, after an attempt to reproduce the results obtained by Collie and Patterson (*A. Y. B.*, 1913, p. 644; 1914, p. 615), concluded that in his opinion, from the viewpoint of both theory and experiment, the source of the neon and helium obtained, aside from the possibility of their entrance as the result of atmospheric contamination, must be sought in some action upon the solids composing the discharge tube, rather than upon the gases in the tube. W. D. Harkins and E. D. Wilson in a series of articles upon atomic structure have presented and discussed the theory that the various chemical elements are to be regarded as atomic (not chemical) compounds of hydrogen and helium. The electrical conductivity of various mixtures of fused salts has been measured by C. Sandonnini. Several contributions to the theory of emulsification and the theory of dyeing have been made during the year by W. D. Bancroft and his associates. T. C. Choudhri has described a new crystalline variety of silver obtainable by treatment of spongy silver, prepared by ignition of silver tartrate, with concentrated nitric acid (free from lower oxides of nitrogen) at ordinary temperatures. The silver that did not dissolve was slowly converted into the long needle-shaped crystals of the new variety. No evidence of the existence of an alkali element of higher atomic weight than cesium was obtained by G. P. Baxter in connection with a series of fractional crystallizations of cesium nitrate obtained from Paris (Maine) pollucite. T. W. Richards and E. P. Bartlett have investigated the compressibilities of mercury, copper, lead, molybdenum, tantalum, tungsten, and silver bromide at 20° C., over a range of 100 to 500 megabars pressure. A valuable résumé of the work done by Richards and his co-workers in support of the

hypothesis of compressible atoms has been published in the form of an address delivered by him as president of the American Chemical Society.

ORGANIC CHEMISTRY

RALPH H. MCKEE

Petroleum.—The presence of optically active constituents in petroleum is strong evidence for the organic origin of the oil and against its origin from carbides or other inorganic sources. Engler and Steinkopf (*Ber. Deutsch. Chem. Gesell.*, xlvii, 3358) point out that though petroleum oils readily lose their activity in whole or in part when exposed to a high temperature, yet, of many samples which have been carefully examined, each shows some optical activity.

Optical Activity.—The simplest possible type of organic compound displaying optical activity has been made by Pope and Read (*Trans. Chem. Soc.*, cv, 811) by synthesizing $CHICl.SO_3H$ and showing that from this compound, containing but a single carbon atom, the dextro and levo constituents could be separated.

Rubber.—The cyclo-octadiene formula for caoutchouc which was proposed by Harries and has been generally accepted has now been withdrawn by its author (*Liebig's Ann.*, ccccvi, 173) and in its place a modification of Pickles' formula (*cf. Trans. Chem. Soc.*, xcvii, 1085) presented. The evidence bringing about this change of view is that the decomposition products, derived from the hydrochloride of natural para caoutchouc by use of pyridine and ozone, decidedly disagree with an eight-atom ring being the basis of caoutchouc and require a much larger ring. The formula proposed is a 20-atom ring with five methyl groups attached.

Heterocyclic Rings.—The types of heterocyclic rings have been increased by the synthesis by Brieger and Schulemann (*Jour. Prak. Chem.* (ii), lxxxix, 97) of rings which are the mercury analogues of piperidine. In some cases more than one mercury atom occupies a place in the ring. In this connection certain rings containing a very large number of atoms should be mentioned, e. g., an 18-membered ring from azelaic acid.

Starch.—Starch is apparently an intimate mixture of amylose and amylpectin. Tanret (*Bull. Soc. Chim.*, xvii, 83) not only shows that starches from different sources differ in the ratio of these two constituents but he gets evidence that the "amylose" is probably a mixture of several different homologous "amyloses."

Flower Colors.—Evidence is accumulating that the varied colors of the same flower are due to different forms of a single anthrocyanin pigment which acquires a red, violet, or blue color, according as the cell juice is acid, neutral, or alkaline. Willstätter and Meig (*Liebig's Ann.*, ccccviii, 61) have tested the theory successfully in the case of the violet flowers of the larkspur (*Delphinium consolida*) by isolating the coloring matter without the use of chemical reagents, and find it, as expected, extremely sensitive to even weak acids and weak alkalies.

Oxonium Bases.—Kehrmann and Bohn (*Ber. Deutsch. Chem. Gesell.*, xlvii, 3052) have added to the evidence in favor of the basic character of the quadrivalent oxygen compounds by obtaining strongly basic substances of this class; for example, methyl and methoxy substitution products of phenylxanthonium were found to give stable bicarbonates and in some cases may even be isolated as free bases. The existence of such stable bases, composed of carbon, hydrogen and oxygen only, emphasizes the enormous influence which is exerted by the molecular structure compared with that due to the nature of the individual elements.

A study of the freezing point curves of aldehydes and ketones with acids by Kendall and Gibbons (*Jour. Amer. Chem. Soc.*, xxxvii, 149) confirms the view that the reaction is ionic and that the compounds formed are due to quadrivalent oxygen.

Quinquevalent Nitrogen.—Noyes and Potter (*Jour. Amer. Chem. Soc.*, xxxvii, 189) show that amino-derivatives of camphoric acid form salts of the general formula $R<\begin{matrix}CO\\NH_3\end{matrix}>O$ in aqueous solutions where the ring so formed is a six-atom ring. Where the ring would be seven-atom in forming the cyclic salt, the substance seems to exist in the form $NH_2—R—$

COOH rather than in the ring form. This is evidence that in ammonium-salt formation nitrogen is quinquevalent and that the hydrogen of the acid combines with the nitrogen instead of remaining united to the acid radical, as has been supposed by Werner.

Cyanamide.—The view is becoming fairly generally accepted that cyanamide is a tautomeric substance existing in the acidic form C $(:NH)_2$ and the basic form NC—NH_2. According to experiments carried out by Werner (*Trans. Chem. Soc.*, cvii, 715), the equilibrium between the two forms in neutral solvents is 60 per cent. of the acidic form and 40 per cent. of the basic form. Moreover the equilibrium is but slowly reached, requiring many hours for its even approximate attainment.

Organic Analysis.—A new method is described by Robertson (*Trans. Chem. Soc.*, cvii, 902) for the estimation of bromine or chlorine in organic compounds by heating with a mixture of chromic and sulphuric acids in a slow current of dry air. The halogen is absorbed by alkaline hydrogen peroxide and estimated volumetrically. The method seems rapid, universal and accurate.

Bibliography.—Among the more important books on organic chemistry published during the year should be mentioned the following:

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Ellis, C.—*The Hydrogenation of Oils.* (New York, D. Van Nostrand Co.)
Haeussermann, C.—*Die Nitrocellulosen.* (Stuttgart, Vieweg und Sohn.)
Kingscott, P. C. R., and Knight, R. S. G.—*Methods of Quantitative Organic Analysis.* (New York, Longmans, Green & Co.)
Rosenthaler, Von L.—*Der Nachweis organischer Verbindungen. Ausgewählte Reaktionen und Verfahren.* (Stuttgart, F. Enke.)
Wahl, André, tr. by Atack, F. W.—*The Manufacture of Organic Dyestuffs.* (New York, Macmillan Co.)
Williams, H. E.—*Chemistry of Cyanogen Compounds.* (Philadelphia, Blakiston's Sons & Co.)

BIOLOGICAL AND FOOD CHEMISTRY

Carl L. Alsberg

Metabolism, Internal Secretion, Proteins.—It has been found that the minimum amount of protein capable of supporting life and growth varies with different proteins according to the amounts and kinds of amino acids of which each is composed. (*A. Y. B.*, 1914, p. 618). The minimum is, however, smaller than was formerly supposed. McCollum and Davis (*Jour. Biol. Chem.*, xx, 641) have found that growth to the normal adult size at the usual rate and continued well nourished appearance are not sufficient evidence that a ration is adequate. Only when normal rearing of the young is repeated at normal intervals can a ration be said to be physiologically adequate. They have found also that the quality and quantity of the mineral salts of the diet are very important. McCollum found only about one quarter of the protein of wheat or corn to be utilized by pigs for growth, while a mixture of the two was more efficient than either alone, though far less efficient than milk proteins. These investigations have led to studies upon the relation of the quality of the proteins of the diet to milk production (Hart and Humphrey, *ibid.*, xxi, 239), upon the amino acids found in feeding stuffs (Grindley, Alsberg and Brewster), and upon the growth of tumors (*A. Y. B.*, 1913, p. 649). Sweet, Corson-White and Saxon (*Jour. Biol. Chem.*, xxi, 308) have found that cholestearin favors the formation of metastasis in rats upon the restricted diets of Osborne and Mendel. It can now be taken as established that certain fats, such as butter, egg yolk fat, cod liver oil, and beef fat contain growth-promoting substances of unknown nature. (*A. Y. B.*, 1913, p. 649.) It is not probable that these substances are either lipoids or nitrogenous since that portion of butter in which they are found is practically free from phosphorus and nitrogen (Osborne and Wakeman, *Jour. Biol. Chem.*, xxi, 91). This is in harmony with the evidence which is accumulating that ordinary lipoids (*A. Y. B.*, 1914, p. 619) are not necessary for growth (MacArthur and Luckett, *Jour. Biol. Chem.*, xx, 161). It is not likely that these growth-promoting substances are to be classed with the vitamines (*A. Y. B.*, 1914, p. 619) since it is probable that the latter are nitrogenous. Concerning the vitamines, the only definite result of

the year is that the views hitherto advanced concerning their chemical structure are not well founded. Lusk (*Jour. Biol. Chem.*, xx, No. 4) has made it extremely probable that such substances as glycocollic and lactic acid, derived from ingested protein, chemically stimulate the cells, causing the heat production observed when proteins are consumed. Levene (*ibid.*, xxii, 425) has separated certain peptids from the protein derivatives, known as kyrines. Myers has demonstrated that creatin and creatinin exist in equilibrium with one another, which explains in part the behavior of these substances in the body. Abel (*Science*, July 30 and Aug. 6, 1915) has found amino acids, lactic acid, β oxybutyric acid, and α-isobutyl-hydantoin in blood by a new method (*A. Y. B.*, 1914, p. 619). Thus a hydantoin has for the first time been isolated from an animal tissue or fluid.

There has also been much activity in the development of analytical methods for metabolism investigations in which it is necessary to determine very small quantities of substances in small amounts of complex mixtures. Methods of determining small traces of substances in small quantities of blood serum or urine are particularly valuable because they make it possible to investigate some of the finer metabolic processes. A number of such methods have been devised and a number of other valuable ones are to be expected in the near future. Great use is being made of colorimetric and nephelometric methods. New methods have been devised for the determination of tryptophan in proteins. As tryptophan, like lysin, cystin and histidin is essential for life, this method should prove valuable not merely in the study of the constitution of the proteins but also in metabolism studies. Hunter and Simpson (*Jour. Biol. Chem.*, xx, 119) and also Marine (*ibid.*, xxii, 54) have found that the amount of iodine contained in the thyroid gland depends upon the amount of iodine in the diet. Kendall (*Jour. Am. Med. Assoc.*, lxiv, 2042) has shown that the physiologically active iodine-containing compound of the thyroid gland is probably di-iododihydroxyindole. Thus it seems that the active agent of the internal secretion of the thyroid gland, like that of the pituitary and adrenal glands, is a basic derivative of an amino acid. Indeed, Guggenheim believes that amines derived from the amino acids of proteins play a great rôle in physiology and that their study will explain many of the phenomena of internal secretion and of the correlation of the various organs. For this reason and because certain amines like epinephrin and pituitrin have therapeutic value, the amines have recently been much studied. They have been made the subject of an extensive monograph by Barger (*The Simpler Natural Bases*, New York, Longmans, Green & Co., 1914). (See also XXVIII, *Physiology and Pharmacology.*)

Plant Chemistry.—Investigation of the constitution of chlorophyll continues. The relation of chlorophyll to blood pigments has been made clear. The hypothesis has been advanced by Willstätter (*Berichte Deut. Chem. Gesell.*, xlvii, 2831) that chlorophyll by itself does not produce the synthesis of starch but that another factor probably inherent in the protoplasm of the chloroplast is also essential. All green plants contain the same chlorophyll while the anthocyanins, the coloring matter of flowers, constitute a large though related series. It has been shown that they are related to quercitrin and flavon. Cyanidin, one of the decomposition products of anthocyanin, has been made synthetically (Everest, *Science Progress*, April, 1915). It belongs to a new class of plant bases. Wells and Osborne (*Jour. Infec. Dis.*, xvii, 259) have shown by the reaction of anaphylaxis that those vegetable protein preparations, commonly designated "proteoses" because their solubility is like that of the proteoses produced by the action of pepsin or trypsin on native proteins, are distinguishable by biologic reactions and are therefore chemically distinct from the other reserve proteins of the seeds. The "proteoses" obtained from different seeds and grains are also quite distinct from one another. They belong to a group of proteins which are chemically distinct from any heretofore recognized and their designation as "proteoses"

is consequently improper. Bunzel (*Jour. Biol. Chem.*, xx, 697) has shown that the so-called pure laccase prepared by Euler and Bolin from alfalfa does not exist. The oxidations assumed to be caused by laccase are in reality due to the alkalinity of the solutions of the salts contained in the preparations—a most important observation for the study of the oxidases. Loeb and Galeotti (*Biochem. Zeitsche*, liii, 474) have shown that in the presence of reducing substances formaldehyde is capable of producing methylation, thus reproducing *in vitro* one of the actions attributed to formaldehyde in plant metabolism. (See also *Agricultural Chemistry, infra;* and XXV, *Botany.*)

Food and Food Control.—More attention than ever is being paid to the milk supply of cities. New York and other cities have made pasteurization compulsory and have established milk grades based on sanitary quality. Breed has proposed a direct microscopic method of bacteriological examination of milk which should greatly facilitate its sanitary control. There is also a steady increase in the production of concentrated milk products, such as skim milk and whole milk powders, and bulk evaporated and condensed milk for use in the baking, chocolate, confectionery and ice-cream trades. Such products are less perishable and more cheaply transported than whole milk. The U. S. Department of Agriculture, accepting the recommendation of the Joint Committee on Definitions and Standards (*A. Y. B.*, 1914, p. 620), has issued a food inspection decision defining evaporated and condensed milk. (See also *Sanitary Chemistry, infra;* and XVII, *Dairying.*)

In United States *v.* R. C. Boeckel & Co., *et al.*, the Circuit Court of Appeals for the First Circuit held that confectionery is adulterated if it contains talc in any quantity, however small. Other important decisions were rendered construing Sec. 9 of the Federal Food and Drugs Act, dealing with guarantees, and upon the amendment of Aug. 23, 1912, which covers false and fraudulent therapeutic claims of medicinal preparations (Notice of Judgment 3962; 222 Fed. 104). All of the cases against nostrums, hitherto litigated under this amendment, have been decided favorably to the Government. The decision of the lower courts upon so-called lithia waters has been sustained by the higher court. Much attention was given by food officials to the adulteration of barley and oats with weed seeds or water, of pepper with pepper shells, to the pollution of oysters, the sweating of immature oranges, and to the traffic in bad eggs. The state of Illinois has enacted a law providing for the state inspection of egg-breaking establishments and the officials of Kansas promulgated regulations for the same purpose. Bills providing for the Federal supervision or inspection of grain grading, the repeal of the mixed-flour law and the amendment of the law taxing oleomargarin were introduced in the Sixty-third Congress but failed of passage.

Personal.—Paul Ehrlich, director of the Imperial Institute for Experimental Therapeutics at Frankfort, and Oswald Loeb, known for his researches upon the application of physical chemistry to biology, have died during the year. J. Traube has established a journal for the publication of physical-chemical investigations in biology.

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CONN, H. W.—"Standards for Determining the Purity of Milk, The Limit of Error in Bacteriological Analysis." (*Public Health Reports,* Aug. 13, 1915.)

FISCHER, Martin Henry.—*Œdema and Nephritis; a Critical, Experimental and Clinical Study of the Physiology and Pathology of Water Absorption in the Living Organism.* 2d ed. (New York, John Wiley and Son.)

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MATHEWS, Albert P.—*Physiological Chemistry.* (New York, Wm. Wood & Co.)—A textbook and manual for students.

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SANITARY CHEMISTRY

E. M. CHAMOT

War Problems.—Not until the great European War is over can the year's progress in sanitary chemistry be fully appraised. Little reliable information relative to important new inventions and new ideas, rumors of which reach America, is obtainable. Many new disinfectants and deodorizers have been tested upon a scale never before possible or required. First-aid dressings were required upon a scale undreamed of, to be applied to wounds infected in the trench warfare with organisms of deadly virulence. The chemists of the warring nations, we have every reason to believe, have been equal to the task, but only with the advent of peace can we know what has been accomplished.

In first-aid dressings, iodine or boric acid were at first employed, the latter in combination with sodium bicarbonate, the former as the tincture or as a mixture of potassium iodide and potassium iodate moistened with an acid. Later in the campaign, salves containing phenol were used, this being virtually a revival of Dr. Beebe's salve, so efficacious in the treatment of victims of the great Chicago fire. (See also XXVIII, *Surgery.*)

For the disinfection of feces, etc., heavy coal-tar oils have proved most satisfactory, but if the treated material is subsequently to be used as a fertilizer, the tar oils are not applicable, the best substitute being sodium cresolate. For the disinfection of cadavers, hypochlorites and chlorine proved without value, but good results followed the application of ferric sulphate, either in dry form or in 15 per cent. solutions. To prevent the breeding of flies, especially in fecal matter, many chemicals have been tried. One of the simplest efficient materials is reported to consist of a mixture of borax and crude calcium borate. Applied to manure up to a rate of three-quarters of a pound to eight bushels, the fertilizing value of the treated manure is not injured, provided it is not employed in amounts higher than 15 tons to the acre.

Another result of the war has been the development in Germany of substitutes for wheat and rye in the making of bread. The chief material tried with varying success is potato flour or potato meal. The sale of these "war breads" necessitated the development of methods for their qualitative chemical analysis. It has been shown that a number of different aniline dyes will stain potato starch, but will not stain the cereal starches, while several other dyes color the cereals but will not color the potato; while still other dyes permit differentiating between the cereals themselves. By combining these staining methods with examination under the microscope the analysis of starchy products has been greatly simplified and perfected.

Water and Sewage.—The methods for the chemical examination of drinking waters have received more attention than in several years, and although no innovations have been suggested, much light has been thrown upon the sources of error and the difficulties frequently encountered. Among the methods receiving the greatest amount of attention and improvement may be mentioned the determination of hardness, the Winkler method for the determination of dissolved oxygen, the detection and estimation of small quantities of free chlorine and hypochlorous acid in disinfected waters, and the detection and determination of small amounts of heavy metals, such as lead, zinc, and copper, in bottled waters.

The U. S. Treasury Department's suggested standard for drinking waters supplied to the public by common carriers in interstate commerce appears to be quite generally approved, and although not sufficiently drastic from the viewpoint of clean water, undoubtedly affords the public a decided and long-needed protection. This standard, wholly bacteriological in character and established as an easy means of laboratory control, may be stated in brief as follows: (1) the total number of bacteria developing

on standard agar plates incubated 24 hours at 37° C. shall not exceed 100 per c.c.; (2) not more than one out of five 10-c.c. portions of any sample of water examined shall show the presence of organisms of the *B. coli* group.

In the field of water purification we find a tendency to increase the lengths of time of sedimentation and coagulation and to extend sedimentation to a great variety of water problems. Dry-feed coagulation appears to be gaining in popularity and these systems are being greatly improved, but so far no really satisfactory dry-feed system for hypochlorite has been devised. An increase in the efficiency of coagulation is claimed to follow the subjecting of solutions of aluminium sulphate to the action of scrap iron and a patent for the process has been issued. Another use to which scrap iron has been put is in the removal of hypochlorite odors from disinfected waters. A short contact completely removes the disagreeable odor and taste, but too long contact, resulting either from too slow a rate of flow or too thick a layer of scrap iron, is apt to impart a ferruginous taste to the water.

Water-works engineers appear to be inclined to extend aeration systems with a view of removing carbon dioxide, as well as bad odors, thereby reducing the solvent action of the water upon iron and lead. A small ozone water purification plant in Maryland claims to be operating efficiently at a cost fluctuating between $2.50 and $4.00 per million gallons. For the disinfection of water, liquid chlorine is rapidly displacing hypochlorites, both in the case of drinking water and sewage effluents.

Two-story settling tanks for sewage seem to be on the increase, while the use of fine screens has enabled engineers to contruct plants with smaller sedimentation tanks and has rendered the handling of sewage sludge cheaper and easier. The light which has been thrown upon the chemical and biological action of sprinkling filters will probably cause them to be regarded with more favor in the future. It is of interest to note the revival of one of the oldest known purification processes, namely, the application of colloidal clay to sewage followed by sedimentation.

Some exceedingly interesting experiments and computations therefrom have been made by Houston upon the removal of typhoid organisms by English filter beds. He finds that under normal conditions and a typical typhoid-infected raw water, the filter effluents will not contain a single typhoid organism in a volume as large as 17,000 c.c. (4½ U. S. gals.).

Foods.—A distinct contribution has been made to our knowledge of the injurious effects of coffee upon certain individuals. Evidence is brought forward to show that some of the volatile products formed in the roasting of coffee berries are decidedly injurious and that any process which removes these substances renders the coffee less active. The simplest process for preventing the formation of these objectionable substances is claimed to be coating the berries with china clay before roasting. Further evidence has also been brought forward substantiating past claims that the way in which the caffein is chemically combined has a very marked influence upon its physiological effects.

Wines have received an unusual amount of attention from chemists during the year, both in regard to their manufacture and improvement and methods for their analysis. Much of the new work has been directed toward the detection and determination of the organic acids and upon total acidity. It has been shown that the acidity, as measured by taste, bears no relation to the total acidity measured by the usual standard methods, but is dependent upon the concentration of the hydrogen ions present. It is therefore proposed that in all wine analyses, in addition to total acidity, there should also be reported the amount of hydrogen ions present.

Exhaustive studies of artificially aged (bleached) flours have shown that the changes induced are not at all of the same character as those resulting in the natural ageing of flour. The failure of certain flours at times to yield marketable loaves of bread has been proved to be due in many cases to the growth of bacteria, especially those of the *B. butyricus* group. Although but little informa-

tion has been obtained relative to these infected flours the work in this field gives evidence of being the beginning of results of far-reaching importance in the milling and baking industries.

Carefully conducted experiments made in Germany upon solidified (hydrogenized) oils have proved that these fats are without evil effect when used as foods and possess as high nutritive values as the natural fats.

Ventilation.—The methods for the analysis of air with reference to ventilation problems has continued to receive the attention this great problem deserves, but no material changes have been suggested, either in the methods of procedure or in the interpretation of results. The third report of the Committee on Standard Methods for the Examination of Air recommends that the following determinations be made: (1) temperature and humidity; (2) dust; (3) carbon dioxide; (4) number and character of bacteria; (5) poisonous metals.

A continuation of experiments upon the sterilization of air by ozone appears to substantiate the general results already obtained, namely, that the complete destruction of microorganisms is practically impossible. Excellent results in the removal of bad odors in hospitals and certain industries are reported, however.

AGRICULTURAL CHEMISTRY

William H. Ross

Soils.—During the year much of the investigational work on soils has had to do with the effects produced through the application to the soil of various substances of a fertilizing nature. An investigation of this kind is represented by the work of Hopkins and Aumer (Ill. Agri. Expt. Station, Bull. 182), who made a study of the power of decaying organic matter to liberate potassium from the usually abundant supply occurring in the soil. This action of the decaying organic matter is shown to be so effective that when applied to the extent of simply incorporating successive crops in the insoluble residue left on digesting a soil with hydrochloric acid, the plants grown in this insoluble residue were able to obtain, at the end of the third year, sufficient potash for a good crop. It is accordingly concluded that potash may be easily liberated in abundance from the ordinary soil by the application of decaying organic matter, and that consequently the purchase of soluble potash salts for use in normal soils for the production of staple farm crops is not recommended. A similar conclusion has also been reached by Roberts from results obtained in experiments made at the Kentucky Agricultural Experiment Station (Bull. 191).

From tests made in soils low in sulphur as compared with phosphorous, it would appear that beneficial results follow the use of sulphur, free or combined, in many cases (*cf. A. Y. B.*, 1912, p. 642), but that it can be used, even in soils of this kind, to the same advantage as the soluble phosphates is doubtful. Experimental evidence that this would not be the case is furnished by the experiments of Fred and Hart (Wis. Agri. Expt. Station, Research Bull. 35), who made a study of the comparative effects of phosphates and sulphates on soil bacteria. It was found that the addition of a soluble phosphate, as potassium phosphate, caused a great increase in production of ammonia in a peptone solution inoculated with soil bacteria, and likewise in a soil to which casein was added. A stimulation in the rate of ammonification was also observed when a sulphate, as potassium sulphate, was used, but in general the effects produced were not nearly so great as followed the use of the corresponding phosphate. Experimental evidence is thus afforded that the increase in crop production of a soil resulting from the application of soluble phosphates is not due only to the phosphates acting as an extra source of plant food, but is also partly due to their promoting bacterial activity.

Until comparatively recently it has been the generally accepted theory that soils become acid through the accumulation of complex insoluble organic acids. The view is now being advanced, however, that the organic acids are only indirectly the cause of soil acidity, and that this reaction is primarily one of selective adsorption. Recent experiments by Harris (Wis.

Agri. Expt. Station, Tech. Bull. 19) support the evidence already advanced in this direction, and the results are interpreted as showing that the acidity of soils of the type investigated is caused by the formation of soluble salts through the interaction of the acids in the soil solution on the basic material naturally held adsorbed by the soil, and their subsequent removal by bleaching. This leaves the soil free to adsorb more basic material from any source, and if a salt solution is added the base will thus be removed, leaving in solution an excess of free acid. The quantity of base adsorbed will vary with the salt used, and it is consequently held that this must render unreliable the results of any analytical method for determining the "lime requirement" of a soil unless the method employs the same material (lime) as is used in the field for correcting the acidity. With regard to this point, however, there is considerable difference of opinion; there are those who still believe in the organic acid theory of soil acidity, and new methods are frequently being devised for determining the lime requirement of soils in which reagents other than lime are used (Truog, *Science*, xlii, 505).

According to the experiments of Schreiner and Skinner (U. S. Dept. Agri., Bull. 164) unproductiveness in a soil may be due not only to an acid condition but also to the presence in the soil of compounds of an aldehyde nature. When separated from soils the aldehyde material is toxic to plants in pure water, in nutrient solutions, or when added to soils in the field. One of these soil aldehydes has been identified as salicylic aldehyde. The compound vanillin which has been isolated from certain soils has likewise an injurious effect on plants, and may persist in the soil for a long time.

Fertilizers.—The experiments referred to in the last issue of the YEAR BOOK (p. 624) on a new method of recovering phosphoric acid by volatilization from phosphate rock by igniting the latter with coke and silica are still being carried out on an industrial scale with apparent success. The phosphoric acid recovered in the process is now being marketed in the form of "double superphosphate," made by adding the phosphoric acid to fresh phosphate rock. This product consequently contains four times the percentage of phosphoric acid that would be contained in superphosphate prepared in the ordinary way from the same phosphate rock.

During the year a few tons of potassium chloride were produced from the giant kelps of the Pacific Coast, and a corresponding amount of potash salts were recovered as a by-product in the cement industry, but so far no important production of any potassium compounds has yet taken place in this country. The practicability of developing the last mentioned industry by using feldspar as the silicate in the manufacture of cement (*cf. A .Y. B.*, 1913, p. 655) is now being tested out by a private concern on an industrial scale. Steps are also being taken to manufacture potash salts from the alunite deposits of Utah, and it is now expected that this source will soon yield a limited supply of these salts. (See also *Industrial Chemistry, infra,* and XVII, *Agriculture.*)

Various waste products of organic origin still constitute the principal source of the nitrogen components of fertilizers. In reports made on the fish-scrap industry of the United States, Turrentine (U. S. Dept. Agri., Bulls. 2 and 150) has shown that the quantity of dried scrap produced on the Atlantic coast amounts annually to about 70,000 tons, and on the Pacific coast to only about 1,650 tons. The former supply, which is produced principally as a by-product in the manufacture of oil from the menhaden, contains on an average about 8.5 per cent. of nitrogen and seven per cent. of phosphoric acid; while the latter, which is produced as waste in the salmon industry, contains respectively nine per cent. and eight per cent. of these constituents.

In the utilization of certain other trade wastes, as hair, garbage tankage, etc., which are low in available nitrogen, the material is first mixed with phosphate rock and then treated with the proper amount of sulphuric acid. The resultant product is known as a "processed" fertilizer. In a chemical examination of this material, Lathrop (U. S. Dept. Agri., Bull. 158)

has shown that the protein present has undergone almost complete hydrolysis by this treatment, and that the nitrogenous compounds contained in the finished fertilizer are simply decomposition products of the primary protein in the untreated material. From the sample examined there were isolated two purine bases, guanine and hypoxanthine; three diamino acids, arginine, histidine and lysine; and two monoamino acids, leucine and tyrosine. Six of these seven compounds are known to be available to plants as such, and have a beneficial action. It is accordingly concluded from this and other considerations that the water-soluble nitrogen of this fertilizer should have an availability equal to or greater than the nitrogen of dried blood or other high-grade fertilizer.

Considerable advertisement has been given of late to the action of radium as a stimulating agent on the growth of plants. Many beneficial effects have been recorded when plants were brought under the influence of radium, and recently there have been placed on the market various radioactive materials for use as fertilizer. A review of results obtained with various radioactive substances is given in a recent bulletin (No. 149) of the U. S. Department of Agriculture. It is concluded from the study that in botanical research, or in greenhouse practice, the use of the radio-elements may prove of great value; but that in the case of the so-called radioactive fertilizers, since the quantity of radium present in the amount commonly recommended for application to an acre is only about one-hundredth of the quantity already present on an average in an acre-foot of soil, any effects produced by the material must be due to the chemical action of the uranium, vanadium, or other constituents present rather than to the radioactivity of the material. More recent tests with different radioactive preparations are described in bulletins of the New Jersey (No. 269) and Illinois (No. 177) Experiment Stations. In each case it was found that the materials used were without effect, either beneficial or otherwise.

Plant Chemistry.—During the past year or two considerable attention has been given to the examination of the phosphorous compounds occurring in various grains. Anderson (N. Y. State Agri. Expt. Station, Tech. Bull. 40) found that when wheat bran is digested in dilute hydrochloric-acid solution the enzyme phytase contained in the bran very rapidly hydrolyzes the organic phosphorous compound of the bran into inorganic phosphoric acid. As the concentration of the acid was increased to 0.5 per cent. or above, however, the enzyme was destroyed and no hydrolysis consequently took place. It was then found when hydrolysis was prevented in this way that the inorganic phosphorous normally occurring in ordinary wheat bran amounts to about 0.1 per cent. of the total phosphorous, and that the organic phosphorous compound present is the same as that which had previously been identified in corn, oats, cottonseed meal and commercial phytin, viz., phytic acid, or inosite hexaphosphoric acid. Thompson (*Jour. Agri. Research*, iii, 425) was able to prepare phytic acid from rice bran and unpolished rice, but not from polished rice, showing that this compound of phosphorous must be largely situated in the outer layer of the rice grains.

It has been observed by Gore (*ibid.*, 187) in a chemical examination of the changes which take place in the peel and pulp of bananas during ripening that the usual carbohydrate changes, as saccharification of starch with formation of sucrose and invert sugar, proceed with uniformity in bananas of different bunches. The quantities of ash, protein and ether extract undergo but little change. No appreciable change takes place in the stems of the banana during ripening, showing that the stems do not contain any reserve materials which are supplied to the fruit during ripening. Analyses of the peel and pulp of ripening bananas showed a steady transfer of water from peel to pulp during the process. This is attributed to the increase in osmotic pressure of the pulp resulting from the conversion of starch into sugar. (See also *Biological and Food Chemistry, supra.*)

Dairying.—In an investigation on the individual constituents of milk Van Slyke and Bosworth (N. J. State

Agri. Expt. Station, Tech. Bull. 39) have shown that the insoluble constituents of fresh milk are neutral in reaction, and when purified consist largely or wholly of neutral calcium caseinate, neutral or di-calcium phosphate and fat. The casein and di-calcium phosphate are not in combination, as shown by the fact that it is possible to make nearly a complete separation of these constituents by mechanical means. The sugar, citric acid, sodium, potassium and chlorine of milk are wholly in solution in the milk-serum. It is shown that the acidity of fresh milk is the same as that of the serum, and is due to the presence of acid phosphates in solution. (See also XVII, *Dairying.*)

ELECTROCHEMISTRY

G. A. Roush

Electrochemical Industries and the War.—Work along electrochemical lines during the year has been greatly influenced by the profound disturbances that have ruled the industrial world as a whole since the opening of the European War. A large proportion of the electrochemical work of the country is more or less connected with the metal trades and so has reflected to a greater or less extent the agitation that has ruled the metal markets for over a year. Copper started the year at 13 cents a pound, rose to almost 20 and then dropped to 17 cents; silver dropped from 58 cents an ounce before the war to 47 cents, the lowest price on record; quicksilver rose from $52 a flask to $95; lead rose from 3¾ cents a pound to over 5½ cents; and zinc soared from less than five cents before the war to 22½ cents and then declined to about half that price. With such fluctuations as these in the metal market, it is not surprising that related industries have been more or less disturbed.

Ferro-manganese, which has been mostly imported, and which, before the war, sold at less than $40 a ton, has, for the greater part of the year, commanded $100 or more, and as a result two or three new companies have entered the field to supply the home market with material made in the electric furnace. Other ferro-alloys are also sharing in this increase to some extent. Ferro-tungsten is particularly in demand for use in high-grade steels. (See also XVIII, *Iron and Steel.*)

This country consumes approximately one-half of the world's supply of tin, but it is entirely dependent on other countries not only for the ore, but also for smelting it to the metallic form. As a result of conditions brought about by the war, steps are being taken toward the establishment of a tin smelter in this country, reducing Bolivian concentrates in the electric furnace.

Organic Products.—At a meeting of the New York Section of the American Electrochemical Society held early in the year, the topic for discussion was the "Electrochemical Production of Organic Compounds." The general opinion seemed to be that there was a considerable field for the preparation in this country of such compounds as have been previously imported, but the importations of which have been interfered with by the war. Subsequent developments have shown the soundness of such opinions, for as the year closes, several interests are actively engaged in the installation of processes for the manufacture of these materials.

Fixation of Atmospheric Nitrogen.—At a joint meeting of the American Institute of Electrical Engineers and the New York Section of the American Electrochemical Society in March, a symposium was held on the "Fixation of Atmospheric Nitrogen." The leading features of the industry are the limitation of the electric-furnace methods due to their extremely low efficiency, and the rapid extension of the chemical processes, such as the cyanamide process (see XVII, *Agriculture.*) (*Met. Chem. Eng.*, xii, 213, 241, 309; *Trans. Am. Electrochem. Soc.*, xxvii, 339, 385, 409.)

Electrodeposition of Metals.—Electroplating has been making rapid advances along several lines. The remarkable results obtained by Kalmus and his associates on the rapid deposition of cobalt will undoubtedly have a considerable effect on commercial plating with nickel, not so much as offering a substitute for nickel as a stimulus to increase nickel deposition to a corresponding speed. (*Trans.*

Am. Electrochem. Soc., xxviii.) Mathers still continues his work on lead and has succeeded, by the use of the proper addition agent, in producing smooth, solid deposits of lead from lead-nitrate solutions (*ibid.*, xxvii, 131). Results of a similar investigation with silver are promised soon.

The action of addition agents in electrodeposition is now a matter of considerable importance, and the subject has been studied from a theoretical standpoint by Mutscheller (*Met. Chem. Eng.*, xii, 353). He concludes that the action of colloids as addition agents is due to their effect on the migration velocity of the ions.

Bennet, Rose and Tinkler conclude that in nickel ammonium-sulphate solution the efficiency of the deposition of nickel on a rotating cathode may be changed by changing the concentration of the hydrogen ions. When the concentration of the hydrogen ions is practically zero, as in the case of a strongly alkaline solution, nickel is deposited more easily than the other ions, so that a lower efficiency would be occasioned by impoverishment of nickel. The rotation of the electrode prevents impoverishment, and therefore increases the efficiency, while in the case of solutions where the hydrogen ions are precipitated, the rotation of the cathode tends to prevent hydrogen-ion impoverishment, and therefore tends to decrease the efficiency. (*Trans. Am. Electrochem. Soc.*, xxviii.)

The problems of copper leaching and the subsequent electrodeposition of the dissolved metal have been attracting unusual attention, and have brought out a wealth of valuable discussion (*Trans. Am. Electrochem. Soc.*, xxvii, 35; Addicks, *ibid.*, xxviii; *Bull. Am. Inst. Min. Eng.*, April, 1915, p. 711; Addicks, *ibid.*, Aug., 1915, p. 1471; Goodrich, *ibid.*, p. 1551; Read, *Mineral Industry*, xxiii, 249; Flynn and Hatchett, *Met. Chem. Eng.*, xii, 291). Probably the most important feature in this line of work was the successful opening in the spring of the enormous plant of the Chili Exploration Co. at Chuquicamata, Chili.

Betts has experimented with the electrolytic refining of antimony but without any great measure of success, the arsenic being difficult to separate (*Trans. Am. Electrochem. Soc.*, xxviii). The present unsettled condition of the metal market, particularly as regards zinc, makes of interest the consideration of the electrolytic precipitation of gold and silver from cyanide solutions, this being apparently the most feasible substitute for the zinc (Clevenger, *ibid.*).

Electrometallurgy of Steel.—The economy of using molten ferro-alloys for additions to steel continues to attract attention, and the electric furnace has proven a very satisfactory and economical means of melting the ferro-alloy. The melting costs are low, there is no loss of ferro-alloy, and the results are more uniform than with solid alloy. (Wile, *Trans. Am. Electrochem. Soc.*, xxviii.)

According to Snyder, electric steel can be produced from cold scrap at a cost of $19.06 per ton on a ten-ton basis, or at $21.36 per ton on a six-ton basis, with a power consumption of 560 kw.-hrs. per ton of steel, corresponding to an efficiency of 63 per cent. (*Ibid.*) Kranz recommends the use of the electric furnace in the making of steel castings because of the high quality of the material that can be obtained by proper manipulation. Electric-furnace products are often looked on with skepticism because some who have adopted the process did so thinking it a remedy for all difficulties, and, as a result, have put on the market materials far below the true standard of electric-furnace steel. (*Bull. Am. Inst. Min. Eng.*, May, 1915, p. 927; *Met. Chem. Eng.*, xii, 565.)

Baily discusses the use of the electric furnace for reheating, heat treatment, and annealing, and concludes that the small electric reheating furnaces are commercially feasible from a fuel standpoint alone, where the current consumption per ton is 400 kw.-hrs. and the rate is one cent per kilowatt-hour, compared with oil, where the consumption per ton is 100 gals. at a cost of four cents per gallon, or natural gas, where the consumption per ton is 12,000 cu. ft. at 33 cents per 1,000 cu. ft., without any allowance for the saving of metal due to absence of scaling in the electric furnace. Electric furnaces of the continuous type of five tons per hour

capacity will show commercial economy over coal-fired furnaces of the same capacity, which require 200 lb. of coal per ton of steel, with coal at $2 per ton, while the electric furnace requires an electric current consumption of 250 kw.-hrs. per ton, current at one-half cent per kilowatt-hour, with a metal saving of three per cent. over coal-firing, heating a steel worth $35 per ton. Further advantage of electric furnaces will be evenness in temperature throughout the billet, and uniformity of temperature from one billet with another. In heat treatment, the saving in operation cost of electric furnaces over combustion furnaces in most cases must come in the elimination of oxidation, as, for instance, on high-grade steel, brass and non-ferrous metals, thus eliminating large expense in acid and labor for the pickling operation. In addition to this, the advantage which outweighs perhaps all others is the precision with which electric heat treatment may be done. On the other hand, the advocates of the old processes continue to emphasize the limitations of the electric furnace in steel making (Muntz, *Met. Chem. Eng.*, xii, 109; Cornell, *ibid.*, 630). Weitlaner discusses the difficulties met in the comparative calculations of the efficiency of electric furnaces and of fuel-fired furnaces (*ibid.*, 357).

Electrometallurgy of Zinc.—With the enormous increase in the price of zinc that prevailed during the greater part of the year, it was to be expected that the development of electric-furnace zinc processes would be pushed. Some plants have actually begun the production of electrolytic spelter (see XVIII, *Zinc*) but no results are reported for furnace processes.

Electric Power.—Beckman calls attention to the fact that almost half of the available water power in the United States is in the three states bordering on the Pacific Ocean, and outlines the possibilities for electrochemical development in this territory. Lyon and Keeney extend the discussion of the subject in a paper entitled, "Electrometallurgical Industries as Possible Consumers of Electric Power." (*Trans. Amer. Electrochem. Soc.*, xxviii.)

INDUSTRIAL CHEMISTRY AND CHEMICAL ENGINEERING

James R. Withrow

Effects of the European War.—The greatest outstanding feature of the year in the world's progress in industrial chemistry and chemical engineering has been the way in which the chemical technologists of the Allied countries and America have cooperated on the problem of munitions. Confronted at the beginning of the war by antagonists whose munitions industry for years had been developed for such a contingency, they have in one year built up an even stronger one. The speed with which these new and unexpected problems have been solved is no surprise to those acquainted with the high stage of development and skill in industrial chemical research and chemical engineering, particularly in America, though one never finds it advertised as some of our European competitors seem to find necessary.

Much of the speculation as to what effects the war would have upon the chemical industries in America has been substantiated and much has not. The nature of chemical industries is such that a great measure of interlocking is essential to efficient economic operation. The majority of chemicals manufactured never come into the public market. They are consumed as raw materials for other manufactures or used as apparently minor necessities in miscellaneous manufacturing. For these reasons alone the popular idea that new chemical industries would spring up while the foreign producers were absent from the field was foredoomed to disappointment. Chemical industries have to be developed in relation to their markets and environment, and this is always a slow process.

The industries which have been seriously crippled by the war are surprisingly few in number, though almost all the chemical and allied industries have been affected to some extent. In the majority of cases, as was to be expected, the chemical technologist rose to the occasion and provided substitutes for hitherto imported materials or invented adequate means of circumventing war-

time difficulties. Not all these rearrangements are transient or satisfactory only under war conditions and prices, as particularly German exporters will find to their sorrow when world commerce is resumed. In many chemical manufacturing lines there is unprecedented prosperity. This has led to great activity and expansion both in capacity and development, and still greater expansion would take place were it not for the expectation of unscrupulous foreign competition after the war. The chemical industries are so aroused to some of these hitherto rampant evils connected with European competition, however, that they are demanding "anti-dumping" legislation to prevent temporary selling in American markets below the cost of production at home, as has been so successfully done in the past to prevent the inauguration or development of certain chemical industries in this country.

The development of industrial chemistry and chemical engineering during the year as a direct result of the European struggle has consisted not so much in the development of new basic processes as in the ingenious adaptation of old ideas, sometimes long abandoned, to a new economic situation. Many small chemical plants have sprung into existence for the making of chemicals the supply of which was curtailed. In some cases the product is much superior to the product hitherto imported. Many developments, however, have been seriously deterred by the high cost of raw materials. Advances in price were often justified by the heavy drains to Europe, but speculation and deliberate withholding of product from the market were responsible for some of the increases. The advance extended in some cases to more than ten times the normal selling price of preceding year, as for instance in the case of bromine, carbolic acid, beta-naphthol, and other materials.

Great permanent advancement in chemical-engineering skill and experience will result from the demands for munitions of war, which have been so extensive and insistent and the prices so high as to insure rapid assembling of plant and quick commercial output. The result has been that a number of "mushroom" plants have been erected for the production of chemical munitions. Some of these plants have been erected where a few months before was primitive forest, but they have been designed with great care and on the basis of years of experience in the production of these products. They have been constructed on such an enormous scale, however, as to call for great inventive genius and advance in chemical engineering, because of the new problems which are inevitably met with in constructing plants even in an old industry on an unprecedented scale. We now have erected and in operation, for example, probably the largest aniline plant in the world. We have at least one nitric-acid plant three times larger than any other known plant, and probably the same is true with reference to cotton purification and nitro-cellulose or smokeless-powder production. The circumstances have enabled the chemical engineers to apply duriron and other similar acid-resisting material, to an unprecedented extent. As a result chemical engineering information should be greatly enriched by the severe testing of these materials and designs.

Potash.—The potash situation has caused considerable discussion because of the embargo on German exports. It is a disappointment to find that the work at Searles Lake and in the kelp-utilization projects in California, which we were given to understand by government departments very shortly before the war to be in an active and promising condition, are making practically no headway even under the favorable price conditions produced by the war. It appears that in the case of kelp too much time was spent on auxiliary products and too little on potash, and that in the other case (a European corporation) much money was wasted on inadequately studied processes. We are now given the hope, however, that a better advised process, using refrigeration for the fractional crystallization of the product, may put the Searles Lake project on its feet.

It will be necessary for the public to be very careful of the exploitations which will doubtless be inaugurated

for the recovery of potash from feldspar. It is possible that some of the projects which have been suggested in the past may be able to make their way under present prices, but the highly speculative nature of the ventures should be constantly borne in mind, even though we may believe that the future will unfold a solution of the problem. No processes are yet in actual commercial use. In the methods proposed either the product is so low in available potash that the freight on the remainder of the material is a serious handicap, or chemicals are required which, while practically waste and therefore cheap, are limited in supply and likely to increase rapidly in price if successfully used in a potash process. Another difficulty is that most of these processes require such a high-potash feldspar that the potteries are willing to pay a price for it, which makes it prohibitive as a source of potash for fertilizer.

Meanwhile the hunt for deposits goes on and occasionally small sources are discovered and utilized, helping the situation to a slight extent. For instance, some 6,000 tons of material averaging eight to ten per cent. potash is being produced from beet-sugar residues after fermentation of the molasses for alcohol production. A lake has been found near Alliance, Neb., containing two to three per cent. of potash, which dries down to a deep mud in the summer. The salt from this lake contains 34 per cent. of potash mixed with soda salts; it is now being produced at the rate of 500 tons per week, which will shortly be increased to 1,500 or more. We are assured that there is ample potash on hand and coming into our ports, so that there need not be a famine of potash fertilizers if the formulae for fertilizers are reduced from five or ten per cent. to about three per cent., but there is not agreement that this is true. Many manufacturers who have been using thousands of dollars' worth of potash salts in miscellaneous materials and products have found, as a result of necessity, that the cheaper sodium salts can be used just as satisfactorily. (See also *Agricultural Chemistry, supra;* and XVII, *Agriculture.*)

Artificial Gasoline.—The rapid increase in automobile and motor-truck production emphasizes an industrial-chemical problem which effects a variety of interests, the supply of liquid fuel or gasoline. High prices paid for crude petroleum from which gasoline can be produced have stimulated production so little as to give small hope for future gasoline supply from the usual crude-petroleum source. This has encouraged the production of gasoline from natural gas, giving "casing-head gasoline," and from higher boiling petroleums. Alcohol and benzol have received increased attention but insufficient prospective supply as well as other factors are against them as motor fuels (see XXI, *Engineering*). Casing-head gasoline production also is inadequately small.

The situation has stimulated inventive effort to prepare gasoline from higher boiling petroleums. The increase of about ten degrees in density of gasoline made in the last few years indicates that more and more of the higher or kerosene fraction is being left with the gasoline fraction, as a rule to the advantage of the gasoline consumer. If this gravity could be made but slightly heavier still, the gasoline output of the country could be practically doubled. Greater density with its accompanying lower volatility causes increased starting and operating difficulties which have not yet been overcome. Hence the invention of proper devices for carburetting these heavier and less volatile fractions would be of great assistance. The progress of the kerosene engine raises hopes in this direction. On the other hand, it has long been known that the less volatile portions of petroleum can be "cracked" or "split" into more volatile portions. The invention of processes for cracking and splitting petroleum, therefore, will produce increasing quantities of gasoline from the heavier and cheaper petroleums and fractions.

The process of cracking is carried out in several ways. It has long been conducted by prolonged heating of the oil at atmospheric pressure for the production of kerosene, and recently plants have been operating at a pressure of 70 lb. for gasoline production. This Burton process, as operated in

Indiana and Philadelphia, gives as a product a valuable fuel, but one which cannot be refined, as has commonly been done with gasoline, because of the presence of large quantities of substances called "olefines"; these are destroyed, as such, in the refining process, though they are reasonably satisfactory as fuel material. It is now suggested to conduct this operation at still greater pressures, by which means the olefines are converted into more stable products and the quality of the gasoline should be of higher grade. One of these processes suggests operating on petroleum vapors themselves, so that both the temperature and the pressure are at a maximum. These processes have not had opportunity to demonstrate their usefulness on a continued manufacturing scale. The difficulties and liability to serious accident of high-temperature, high-pressure operation makes the problem one which demands great engineering skill in avoiding serious accident and loss. A recent process which is just being considered for practical application makes use of chemical materials in the shape of aluminium chloride as a reagent for splitting the petroleum bodies. The adequate recovery of the aluminium chloride from the carbon residues will probably be the key to the success of this suggestion. The attractiveness of this whole field is readily seen when one considers that the fractions used are those which are really suitable only for cheap fuel oil.

Lead Oxides and Pigments.—A good illustration of the unexpected assistance which may come from one chemical industry to another bearing no apparent natural relation to it is the important improvements in the production of oxides of lead and the relation of the new products to the alleviation of the shortage in coal-tar dyes. Of the compounds of lead there are two oxides, orange mineral and red lead, which are highly prized as pigments. For many years orange mineral was made solely from white lead, and in fact it is commonly stated that it can be made in no other way. It is becoming gradually known, however, that the best grades of orange mineral are being made by manufacturers who have no white lead at their disposal. This new product is greatly superior to the old-process orange mineral. A cubic inch of the new orange mineral weighs only 14 gm. and has been made as low as ten, whereas the better grades of old-process material run 22 to 28. This means that careful research on these oxides of lead enables ten pounds of the new orange mineral to go as far in painting as about twice as much of the old-process material.

In addition the new product has been intensively studied during the year because of the coal-tar dye shortage. For some years there has come about an increasing use of certain classes of organic (coal-tar) dyes in the making of colored paints, and when judiciously used they are very permanent, particularly the reds for outside wear. These pigments, known as "para-reds" because they are derived from what are known as "para-substituted" anilines, toluidines, etc., are made by virtually dyeing a white body or pigment to the red shade desired. Certain white precipitates possess the power of absorbing certain dyes just as cotton or wool does. The dyeing is done by "striking" the precipitate and the dye together in the tank or dye vat, the precipitate being formed in the vat in presence of the dye or while the dye is being formed.

The scarcity of dyes and their intermediate chemicals due to the war has greatly handicapped this portion of the color industry. The American industrial chemist by the intensive study of the tintorial power of orange mineral has greatly relieved the situation. The highly tinting lead product which is being produced, when mixed with para-red, permits the use of much less para-dye pigment and will be of permanent assistance in curtailing the demand for foreign dyes.

Other oxides of lead are being greatly improved in quality. A new product, "sublimed litharge," of a beautiful canary-yellow color, is coming on the market. Its high chemical reactive power and ease of solution has demonstrated its value, particularly in storage-battery production, submarine work, acetate and ar-

senate of lead. Lead as pure as the electrolytic product is now being refined by a modification of the old Parkes process for the production of special oxides for the ceramic enamels and glass, where even 0.001 per cent. of copper in the lead damages glass by giving a distinct color to it.

Coal-Tar Dyes.—The dye situation is of interest to a number of industries and has become somewhat acute as a result of the war. While more manufacturers have been frightened than have been actually hurt, some will doubtless be compelled to turn to vegetable sources, such as the logwoods, for dyes. Most industrial chemists are inclined to allow the textile industry to suffer as a punishment for their political assassination of the dye industry in this country, by preventing adequate tariff protection, etc. Those consuming black dyes in the textile industries, or at least a large portion of them, have recently entered into negotiations with at least one dye concern which has been actively making dyes in this country for many years, with the result that they have guaranteed sufficient business to make it possible to erect additions to the existing plant so that some $6,000,000 worth of black dyes may be produced annually. The American Chemical Society and others are actively urging upon the President the importance of an adequate "anti-dumping" law which will prevent the otherwise certain annihilation of this dye industry as soon as the European manufacturers' attention is withdrawn from the war. The proper tariff protection has received careful investigation. The industry is really a small one, something less than $10,000,000 being the value of our imports, and therefore many feel we should not go to undue extremes in efforts to develop it here. The difficulties in the way of development and long time that will be necessary also are drawbacks. The fact that the industry is intimately connected with the explosives industry, however, makes some attention to it important as a matter of national preparedness.

Coking By-Products.—A notable effect of the war has been the extensive development at many of the by-product coke-oven plants of a better utilization or recovery from the waste gases of the hydrocarbons benzol and toluol which are ordinarily produced from coal tar. Hitherto in many installations, even where other by-products were recovered, the benzol and toluol dissolved in the gases, particularly the gases used or consumed in the process itself for heating purposes, were ignored and not recovered. The present demands for benzol and toluol for explosive purposes particularly have caused the installation of a number of plants for the recovery of these products from the waste and fuel gas. One of these new plants is said to have an output of 5,000,000 gals. of benzol and toluol. Hitherto the total American output of these substances, so important as starting material for dyes, etc., has been in the neighborhood of 14,000,000 gals. a year. A significant feature of this development is the fact that when the present abnormal demand for the product ceases, the powerful interests which control these recovery plants will be found assisting and backing the small group of industrial chemists who for years have been struggling against many of our artificial and political handicaps in developing certain phases of industrial chemistry in this country.

Argon.—One of the interesting new developments during the year has been the manufacture of the noble gas argon, which is being shipped in flasks of 100 cu. ft. capacity for use probably in the new argon high-efficiency tungsten lamps. This work is a development of the cyanamide industry, in which nitrogen from the atmosphere is absorbed by calcium carbide heated in an electric furnace. The argon, not being capable of reacting, is left when the nitrogen is absorbed and is then purified.

Perkin Medal Award.—The 1915 Perkin medal was awarded to Edward Weston for his distinguished services in chemical engineering and metallurgy, particularly his pioneer work in the fields of nickel plating, dynamos, arc lights, incandescent lamps and filaments, and his remarkably successful standard electrical measuring instruments based on his researches on alloys.

Bibliography.—The coal-tar dye industry and the war's effects on American chemical industries are ably discussed in the *Journal of Industrial and Engineering Chemistry* (1915, pp. 131, 694) and the *Journal of the American Chemical Society* (1915, p. 2231). The contributions of the chemist to American industries is discussed by authorities in the *Journal of Industrial and Engineering Chemistry* (1915, p. 273) and the gasoline question in the same (pp. 176, 180, 737).

PHYSICS

C. E. Mendenhall

Tendencies in Physical Research.—The progress in physics during the year 1915 is not distinguished by any very striking theoretical or experimental advance, nor by any marked concentration of effort along any particular line. An appeal to the "quantum" hypothesis of Planck, or one of its many modifications, continues to characterize the majority of theoretical articles, but there is as yet no agreement as to the exact form to be preferred, and there have been a few efforts to show that the hypothesis is not only unnecessary but insufficient in certain cases.

General Physics.—Tolman (*Phys. Rev.*, Sept., 1915) has further considered his principle of similitude and has shown, contrary to the opinion expressed here last year (*A. Y. B.*, 1914, p. 633), that the principle of similitude is more general in its application than the older principle of dimensional homogeneity, though the two have certain limitations in common. Wood (*Philos. Mag.*, Aug., 1915) describes an ingenious device for obtaining a well defined stream of mercury molecules, and examining its apparent reflection from solid surfaces, which may be useful in disclosing the detailed molecular structure of crystal and other surfaces. It is very doubtful, however, whether any true reflection occurs under these circumstances.

Cosmical and Geo-physics.—Of some interest, though not new, is a summary by Fokker (*Philos. Mag.*, Jan., 1915) of Einstein and Grossman's relativity theory of gravitation. The question of the constitution of the sun has been extensively considered by St. John (*Astrophys. Jour.*) who concludes that in the main the heavy and rare elements are detectable only in the lower levels of the solar atmosphere, and that the red end of the solar spectrum comes from greater depth than the violet. The hypothesis of Julius that solar appearances are largely determined by anomalous dispersion, is also the subject of lengthy discussion, St. John deciding against the Julius hypothesis, on the basis of observations at Mt. Wilson, and Albrecht in favor of it. Fowle (*ibid.*) has studied the scattering of sunlight by the earth's atmosphere, and on the basis of Rayleigh's theory has computed the number of molecules in a cubic centimeter of air (2.7×10^{19}) in close agreement with Millikan's value determined by entirely different methods. This would seem to settle the sometimes disputed question as to the possibility of scattering by individual molecules. New evidence that the sun's radiation, outside the earth's atmosphere, is not more than 1.93 calories per sq. cm. per minute, has been furnished by Abbot and co-workers, and seems sufficiently conclusive to satisfy the most critical. A. H. Compton (*Phys. Rev.*, Feb., 1915) gives the results obtained with a very ingenious laboratory apparatus by means of which a determination of latitude, azimuth, and the length of the day may be determined without any astronomical observations. (See also XXII, *Astronomy.*)

Heat.—Porter (*Philos. Mag.*, Jan., 1915) discusses the variation of saturation, vapor pressure, and concludes that the triple point is a variable point depending upon the hydrostatic pressure, contrary to the usual idea. Knudsen, by very delicate manipulation, has measured the rate of evaporation of mercury per unit area of surface, and compares the observed value with the computed mass of mercury molecules from the saturated vapor which hit unit area of the liquid per second. He con-

cludes that all the molecules striking a clean surface stick to it, but that very slight contamination enormously reduces the rate of evaporation, and the proportion of molecules which penetrate into the liquid upon impact. Bender has searched for the critical temperature of mercury, and concludes (by extrapolation) that it must be about 1,650° C., 400° higher than had been given. Interesting luminescent properties of the vapor were developed about 1,400° C. At the other end of the temperature range, Onnes and Holst (Amsterdam Academy) have studied the specific heat and thermal conductivity of mercury between 3° and 6° absolute.

Compton (*Phys. Rev.*, Sept., 1915) considers the problem of the rapid decrease of specific heat at low temperatures as first shown by Nernst, and succeeds in accounting for the observed facts without using a quantum hypothesis, on the basis of the formation of molecular clusters at low temperatures, a suggestion often made but never before worked out.

Bridgeman (*Phys. Rev.*), continuing his general study of change of phase under pressure, gives new melting curves for nine substances and discusses the general problem of melting from the thermodynamic standpoint.

Electricity.—The greater part of the work in the field of electricity has to do with the application of electrical ideas in other branches of physics, and the development of the electron theory. Beginning with the presumably simpler conditions of gaseous conduction, McLennan and Keys have extended the study of ionic mobility in air up to 180 atmospheres pressure, at which pressure the negative ions move with about the same velocity (per volt cm.) as the positive ions. It has been found that free electrons can exist in very pure hydrogen at ordinary pressures, and in dry air at somewhat reduced pressures. Sawtelle (*Astrophys. Jour.*, Sept., 1915) has developed a very ingenious method for starting a spark at a definite instant of time, controllable to 2×10^{7} secs., thus enabling the spectrum of the spark to be studied at successive instants during the life of the spark. One of the important electrical problems is the study of the passage of electrons from a solid or liquid to space. McLennan and Found have concluded that in order to drive electrons from zinc by *alpha* (+) ray bombardment, the presence of hydrogen on or in the zinc is a very important if not a necessary factor. Campbell also finds that hydrogen is an important factor when the bombardment is by cathode (—) rays. This is of interest in connection with the continued emphasis upon the importance of gases, and especially hydrogen, in the discharge of electricity from metal surfaces by light (photo-electricity). Gehrcke and Janicki (*Ann. d. Phys.*, Aug., 1915) are the last to study this gas action. There is not as yet unanimity of opinion as to whether the photo-electric property is a primary characteristic of metals or only of metals with gas dissolved or absorbed in them, and perhaps a secondary result of photochemical action. What is needed is better control of experimental conditions. In the meantime Millikan has continued his study of the maximum velocity of photo-electrons as dependent on the wave length of the exciting light, and again finds that Planck's constant "h" determines the relation of velocity to wave length.

Electron Theory.—A great many papers have been published on the electron theory during the year without any striking advance being made. J. J. Thomson (*Philos. Mag.*, July, 1915) has modified one of his early theories of metallic conduction so as to take into account the facts of supra-conductivity. Livins (*Philos. Mag.*) has a long series of papers which however involve chiefly a more exact discussion and comparison of the theories of Lorentz, Thomson and others. Lindeman (*ibid.*, Jan., 1915), in order to avoid the difficulty as to the heat capacity of the electrons which has hampered various theories, suggests that the electrons may form a "space lattice" or crystal framework in metals, not partaking of the irregular atomic heat motions, and transmitting heat by elastic waves. This completes the range of hypotheses from that of perfectly free to perfectly fixed electrons, with the same variation in assumed atomic con-

straints. No type of theory has been able as yet to account for even the most important properties of metals in an entirely satisfactory manner, but no one doubts the reality of the electron as an all-important constituent of matter.

Magnetism.—Barnett (*Phys. Rev.*, Oct., 1915) and Einstein (*Deut. Phys. Grs.*) have demonstrated by inverse methods the existence of permanent molecular electric currents or orbital electrons in iron, which long ago formed the basis of Ampère's theory of magnetism, but whose existence had not before been directly proved. Barnett showed that a steel rod becomes slightly magnetised when rotated, and Einstein demonstrated that an iron cylinder is given a rotation around its axis by the act of magnetising it along the axis.

Light.—From the standpoint of emission, the attempt to associate certain lines or series of lines in the emission spectrum of a substance with different electrical conditions of the atom or molecule, is the dominant problem (see review by Fulcher, *Astrophys. Jour.*, June, 1915). Strutt (*Proc. Roy. Soc.*) studied the luminosity of the vapor of mercury and other metals in the vacuum arc, and concluded that the emission is from the positively charged centers, and is not due to the process of recombination of the ionized vapors.

McLennan and Henderson (*ibid.*, Aug., 1915) have shown that cadmium and zinc vapor if bombarded by cathode rays (electrons) will begin to emit light and also be ionized when the velocity of the impinging electrons exceeds a fairly definite minimum characteristic of each element. The light first emitted is of a single wave length, the 2536 A. U. line in the case of mercury, as previously shown by Franck and Hertz. As the velocity of the electrons is increased, a point is reached, also quite definite but different for each element, at which the single-line spectrum changes into the many-lined spectrum ordinarily obtained. The kinetic energy of the impinging electrons necessary to produce the single line is in each case approximately that given by the quantum relation, energy $= h \times$ frequency, and to fit Stark's data we must suppose that emission occurs when the positive ion and the removed electron recombine.

Baly (*Philos. Mag.* and *Astrophys. Jour.*) has discussed in a series of papers the phenomena of light absorption and fluorescence in organic solutions, and Nichols and Merritt (*Phys. Rev.*, Nov., 1915) present results on the fluorescence of solid uranyl salts. The occurrence of constant frequency differences between bands is the most noticeable experimental fact.

Lyman (*Nat. Acad. Proc.*, June, 1915) has succeeded in further extending the region of known ultra-violet wave lengths to 600 A. U., using helium as the source. Born and Osseen have attacked, in important papers, the rather neglected theory of rotation of polarized light by non-crystalline bodies, and have built up an "active" molecule by considering the interaction of electronic vibrators in the atoms forming the molecule.

Senftleben has attempted to determine the number of emission centers radiating the lines D_1 or D_2, respectively, in sodium vapor at various temperatures and densities, and finds about twice as many for D_2 as for D_1, independent of temperature and density of vapor, though Wood has found the relative intensity of the lines to vary considerably with the density of vapor. Strutt (*Proc. Roy. Soc.*, Aug., 1915) finds that D_1 and D_2 can be excited by illuminating sodium vapor with ultra-violet light of wave length 3303 A. U., this being a double line, the second in the series of which D_1 and D_2 are the first. Either member of this doublet, however, excited both D_1 and D_2, but produced no resonance or other observable radiation. It is interesting to compare this result with that of Wood, who found that D_1 and D_2 could themselves be separately excited, by light of their own wave length.

Hulbert (*Astrophys. Jour.*, Oct., 1915) has carried out some interesting measurements of reflecting power of metals in the extreme ultra-violet, and Randall (*ibid.*, Sept., 1915) has continued his important studies of infra-red emission spectra.

X-Rays.—J. J. Thomson (*Proc. Phys. Soc.*) and Laird (*Ann. d. Phys.*,

March, 1915) have succeded in producing X-rays of unusually long wave length, by bombardment with Kanal or slow cathode rays. There is still, however, a gap between known X-rays and the limit of the ultra-violet spectrum (see *supra*). The relation of the wave length of the X-rays produced to the velocity of the cathode rays producing them has been studied for a tungsten target by Rutherford and Barnes (*Philos. Mag.*, Sept., 1915) and Duane and Hunt (*Phys. Rev.*, Aug., 1915), with somewhat discordant results. The question whether a definite minimum velocity is required to produce X-rays of a given length, and whether if so this velocity is connected with the wave length of the rays by the quantum equation cannot be finally answered, though the quantum equation (see *supra*) seems to hold for low-velocity electrons. Later work by Hall is decisively in favor of the equation.

Bragg (*Philos. Mag.*, March, 1915), as a result of studies of X-ray absorption and wave length, has suggested that the characteristic X-rays of a substance form a group which can only be excited as a whole. Wagner (*Ann. d. Phys.*, March, 1915) gives a large amount of new data bearing on this problem. The recent discovery of Küpper that illumination of polyatomic gases by X-rays or ultra-violet light increased the velocity of sound by as much as 20 per cent., has been the subject of considerable speculation, as the change seems much too large to be accounted for directly by ionization. Czukor has suggested that the cause may be an increase in the moment of inertia of the molecules due to the X-rays or light, and in particular has suggested a form for the HCl molecule to bring this about. The observations, which are quite new and unexpected, deserve further study, and may indeed be entirely spurious.

Crystal Structure.—Bragg (*Philos. Mag.*, Aug., 1915) has continued his determination of crystal structure with studies in the spinel group, and has reviewed the general field also (*Philos. Trans.*). Bragg and also Compton have especially considered the possibility of deciding something as to the volume occupied by the atoms in a crystal, and the distribution of the electrons in the atom, from the rapid decrease of the intensity of X-ray lines in the higher order spectra. For example, the indication is that the sulphur atom is much more concentrated than the zinc atom. Jaeger has examined the diffraction of X-rays by plates of biaxial crystals, and concludes that the results are more unsymmetrical than the simple theory, as used by Bragg, can account for. Crehore, in a series of papers (*Philos. Mag.*) has concerned himself with the possibility of reproducing Bragg's structure of diamond and rock salt as a stable arrangement of Thomson orbital or gyroscopic atoms.

Atomic Structure.—Bohr's theory of atomic structure (*A. Y. B.*, 1914, p. 638) is still the most discussed, in spite of the criticism to which it has been subjected and in spite of the fact that its chief result has been to connect the Balmer series lines of hydrogen with the quantum hypothesis. Bohr (*Philos. Mag.*, Sept., 1915) has restated his theory and discussed some of the criticisms. Because Curtiss has discovered lines in the hydrogen spectrum which do not fit Balmer's law, Allen is led to add a magnetic field to the core of Bohr's atom, and W. Wilson attempts to combine in a new way the ideas of Planck and Bohr.

The "Quantum" Hypothesis.—Because of the important part that the "quantum" idea, in one form or another, is playing in current discussion, it is well to recall that the one feature which is common to all forms of the theory is the definite constant "h." This "h" has appeared in three ways as an experimental constant—namely, as the slope of the energy-frequency line in Millikan's photo-electric work, in Frank and Hertz's study of emission by electronic impact, and in the constant of the Balmer series law as given by Bohr. Attempts to derive it also from X-ray wave-lengths as related to the energy of impinging electrons though not as yet very concordant, indicate that "h" is also intimately involved in the process of generating X-rays. It is these experimental results which give "h" its greatest significance.

XXV. THE BIOLOGICAL SCIENCES

ORGANIC EVOLUTION

W. L. Tower

General Survey of Activities.—The year has seen a marked decrease in the output of investigations, especially from Europe, while in America activities center about the problems of heredity and the application of known principles to the problems of plant and animal breeding and to the eugenic propaganda. Progress during the year in the discovery of new principles is strikingly absent, the publications consisting largely of the addition of new examples, or the application of existing principles to economic problems.

Most noteworthy in the general situation is the continuation of the investigations of Morgan, which yield a large body of added data and an extension of the principles of sex-linked inheritance, with the continued demonstration of the grouping of the gametic agents into groups, corresponding to the reduced number of chromosomes in the gametes. The numerous minor papers in the journals of record, by Morgan and his coworkers, and the general account of this work presented in *The Mechanism of Mendelian Heredity*, extend the available information and present an unusually clear and unbiased account of the investigations and principles. The general work especially can be commended as being the clearest and most readable that has appeared.

In the general hypotheses of evolution, the year has shown no additions of any moment, with a diminished number of papers from the special pleaders for one or the other theory, and these largely limited to discussions of the mutation theory. As noted last year there is an increased use of the newer principles in agriculture, animal breeding, eugenics and medicine. The varied application of the Mendelian mechanism of heredity, the pure-line conception, noted under their appropriate heads in detail below, show in general the utility in practical operations, especially in the literature coming from the agricultural experiment stations. The work accomplished, of increasing volume, is strikingly good and of much economic worth even in this early stage, so that much may be expected from this line of effort in applied evolution in the future.

General Evolution Hypotheses.—Aside from a few minor papers, the publications of the year deal almost entirely with the mutation hypothesis in one or another of its diverse aspects, but without adding much to the general subject. Holmes in a critical paper (*Jour. Her.*) discusses the "Unit Character," the conception upon which the mutation theory is based, and concludes that the case for unit characters is far from proven, especially the losses which are assumed by many; while Gates in *The Mutation Factor in Evolution* brings under one cover many of the discussions of the last few years, adding especially data of his investigations upon *Oenothera*, the whole forming a contribution to the subject that is instructive and valuable. Jeffrey, in "Some Fundamental Morphological Objections to the Mutation Theory of DeVries" (*Am. Nat.*), holds that hybridization in the *Oenotherae* is common, that *O. Lamarckiana* is a hybrid, and that therefore the whole hypothesis is invalidated. Jeffrey, in common with many, does not seem to comprehend that the theory and the data upon which it rests are physiological in character, that the types of behavior shown is the essential point and does not depend in any degree upon the

character of *O. Lamarckiana*, whether hybrid in origin or not, and that morphological objections and considerations are of no moment in the investigation of the hypothesis. Redfield, a firm adherent of neo-Lamarckianism, gives in *Dynamic Evolution* another body of data, which, he holds, prove the truth of the inheritance of acquired characters, but while the data may be interesting the conclusions drawn are far from logical and will not be accepted by many. Longman ("Radiogenesis in Evolution," *Proc. Roy. Soc. Queensland*), after an examination of several groups of animals, especially the marsupials of Australia, the Drepanidae of the Hawaiian Islands, and the Achatinellidae of Oahu, concludes that variation and hence evolution has not been definite and simple, but polychotomous. The key he holds to be radiogenesis and not orthogenesis; his conclusions, however, are interpretations, not proofs. Osborn, in an interesting paper on the "Origin of Simple Characters as Observed in Fossils and Living Animals" (*Am. Nat.*), presents from the paleontologists side the question of the rise of characters, essentially an orthogenetic process (see also *Paleontology, infra*). This general type of contribution really adds nothing to the subject, apart from the author's individual interpretation as to how any observed existing series of conditions may be conceived to have arisen. In all there is no proof, nor can there be, as proof can come only from exact experimental investigations; hence we may expect a decrease in literature in this line, as is indeed now apparent.

Evolution of Species.—A fairly numerous assortment of papers deal with the origin and evolution of different species, especially, of domesticated forms. Hrdlicka ("The Peopling of America," *Jour. Her.*) has an interesting account of the aborigines of America, which he finds were yellow-brown, allied to the same races of Asia and Polynesia; the characters of the different stocks are given, which are thought to have arrived within relatively recent times. Denby, in "Progressive Evolution and the Origin of Species" (*Am. Nat.*), discusses well worn problems, but in a rather interesting manner. But the most interesting paper of the year is by Lamb (*Trans. Linn. Soc. Lond.*), who describes some new species of Diptera from the Seychelles Islands and other insular areas in the Indian Ocean. The species of *Drosophila* are of especial interest, in that they present characters which in many respects resemble or are the counterpart of many of the characters which have arisen under experiment in the cultures of *Drosophila* investigated by Morgan. If further examination should show this to be true, it would be a most interesting instance of parallel evolution in materials that are widely separated, and might give important data bearing upon the problem of the similarity of species in remote locations.

Selection.—Little of value has appeared during the year with regard to selection, the tendency being to regard the results accomplished by selection methods as being due to the isolation of pure lines from the population rather than to modification by the accumulation of the characteristic investigated. Pearl ("Seventeen Years' Selection of a Character Showing Sex-Linked Mendelian Inheritance," *Am. Nat.*) gives an interesting account of selection in Barred Rock poultry for egg production. The conclusion reached is that the selection is effective where it is real, but consists in the separation out of the lines of genetically high egg producers. Pearl holds that it has never been shown that a character has been changed by selection, thus differing from Castle, who holds that in his materials (hooded rats) selection has changed the unit factors. The theory of natural selection, as a means of explaining evolution in nature and in adaptations, has received no addition of merit during the year, the few papers being only interpretations of products which assume but never prove that natural selection is doing the work.

Variation and Mutation.—The year has shown an increasing frequency of papers in this subject from agricultural experiment stations. The data of the year consist either in the record of instances of variations of

diverse kinds or in the genetic analysis of the constitution of new types, especially of mutations of hybrid origin. Statistical investigation of variation shows a continued decline, the year having produced nothing of any moment. Gates ("On the Nature of Mutations," *Jour. Her.*) discusses the general problem of mutation and concludes that the cause is a chemical rather than a morphological change in the chromosomes and is distinct from hybridization; and Hayes ("Tobacco Mutations," *ibid.*) thinks that it is not due to hybridization but to some change in the germ cells after fertilization. Bartlett ("Mutation *en Masse*," *Am. Nat.*), working with *Oenothera Reynoldsii*, concludes that mutation in a population is due to a change in one or a few gametes in the generation preceding the one in which the mutation appears, being masked in the generation in which it arises by the dominance of the parental characters but appearing by segregation in the following generation. In animals the investigations of Morgan and his associates have produced a number of instances of mutation from *Drosophila*. Hyde (*Am. Nat.*) describes the origin and behavior of a scarlet-eyed mutant in *D. repleta*, a recessive but not sex-linked, and in *D. confusa*, a new wing mutant, also a recessive not sex-linked. Duncan (*Am. Nat.*) gives data of the attempts to produce mutations through hybridization. After many crosses he concludes that: "In the light of these results we can only attribute the origin of mutations to chance, since hybridization does not occupy a privileged position relative to the effect." Morgan has described new mutations in his cultures of *Drosophila*, a concise account appearing in his *Mechanism of Mendelian Heredity*. Gates ("Modification of Characters by Crossing," *Am. Nat.*) discusses the changes produced in Oenotherae, and describes (*Jour. Gen.*) the origin and behavior of *Oenothera rubricalyx*. Sumner, in "Genetic Studies of Several Geographic Races of California Deer Mice" (*Am. Nat.*), finds that the differences are gametic and the different races are genetically stable. Castle and Hadley (*Am. Nat.*) present investigations of the Mendelian unit characters in the English rabbit; they find that the unit character can be changed by means of quantative selection and that the change has no necessary relation to its Mendelian behavior. The general results of Castle along this line are significant of the fact that too sweeping generalizations and definitions have no doubt been drawn by the Mendelian workers with regard to the fixed nature of variations or mutations appearing in experiments. Castle's results go to show that, in some instances at least, the variability of a character is one thing, its reactions in crosses another, a fact of which many seem to have completely lost sight.

Heredity.—As in the past years, the literature in heredity exceeds that in any other field in evolution, not only in amount but also in precision of data and analysis. Practically all investigators are working with the Mendelian reaction in mind, and the findings are interpreted as Mendelian in instances where there should be further investigation before any conclusion is reached. One notes also a tendency to stop at the second hybrid generation, while in many cases more valuable results would have been obtained by carrying the investigation several generations more. In general the investigators show caution and fairness with regard to their findings, with a marked decrease in the dogmatic assertions so common a few years ago. Baur (*Einführung in die Experimentelle Vererbungslehre*, Borntraeger, Berlin) presents an exceptionally clear account of the current Mendelian principles with well chosen examples, which, while treating of other aspects of modern genetics, is in the main devoted to heredity. Conklin in *Heredity and Environment in the Development of Man* (Princeton Univ. Press) presents a good review of different aspects of recent work, but the book is somewhat marred by inaccuracies of statement which are perhaps not easy to avoid in a work intended for popular consumption. Of the many papers in the different journals of record, one of the most interesting is that by Slye on "Inheritance of Cancer in

Mice" (*Jour. Med. Research*). Over nine thousand autopsies were made and carefully diagnosed in lines in which cancer was hereditary. It was found that cancer was not transmitted as such, but rather a tendency to cancer incidence upon the advent of some appropriate inciting cause. The most frequent cause seemed to be over-irritation. The cancer in these mice is not distinguishable from human cancer, and the transmitted tendency acts on the whole like a Mendelian recessive. The frequency of cancer in the strains is remarkably close to the expected proportion, when the complex nature of the character is considered and also the fact that the capacity to transmit cancer may be present but not developed or may not be detected, owing to early death or death from other causes before cancer has been produced. Castle and Fish (*Am. Nat.*), after investigation of the multiple allelomorphs in black and tan rabbits, conclude that they are not stable and that the selection of fluctuations may not be ineffective in the modification of them. Barrows and Phillips (*Jour. Her.*) have given an account of the inheritance of coat color in Cocker spaniels, of interest especially to dog fanciers, and Punnet (*Jour. Gen.*) gives further data upon the inheritance of coat color in rabbits, especially regarding multiple allelomorphs therein. Warren (*Ann. Natal Mus.*) has described some interesting crosses in cockatoos, and Gunther and Pauly (*Archiv f. Mic. Anat.*), some reciprocal crosses in hybrid fish, in which the difference in reciprocal crosses is the chief item of interest. Tanaka (*Zeit. f. ind. Abs. u. Vererb.*) presents interesting data upon gametic reduplication, and Lashley (*Jour. Exp. Zoöl.*), data of the inheritance of a sexual reproduction in *Hydra*.

In plants, East (*Am. Nat.*) discusses the chromosome view of heredity and its significance for plant breeding, and Norton (*ibid.*) the behavior in heredity of the "habit" of the common bean. Bateson and Pellew ("Genetics of Rogues," *Jour. Gen.*) find that in plant cultures thoroughly typical plants occasionally throw rogues and also intermediate forms. The rogues when fertile breed true; the intermediates throw rogues and the typical plant. Miles (*Jour. Gen.*), in the cytological study of albinism in maize, as well as in the genetic investigation, adds to the existing data regarding this interesting recessive. Many other records of heredity in plants, of routine Mendelian reactions, occur, but add nothing essential to the known data.

Cook (*Jour. Her.*) thinks that there are two classes of hybrids, those of the first and those of the second generation, and that they should be carefully distinguished. Wentworth (*ibid.*) advances the view that prepotency is a quality of characters rather than of individuals or races, but it is rather difficult to see wherein this differs from the usual diverse manifestations of dominance. Jennings (*Am. Nat.*) gives formulae for the determination of the coefficient of inbreeding which may prove useful in some investigations where it is desired to treat the results of populations statistically.

Morgan, in *The Mechanism of Mendelian Heredity*, has presented a résumé of his investigations with *Drosophila*, of which the chief point of interest is the proof of the existence of four groups of agents in the gametes, a number corresponding with the reduced chromosome number of the germ cells. Many interesting data of the relation of these agents, of their action in crosses, of the gametic constitution of many of his mutants, with thoroughly openminded and critical discussion of his results and of those of others, give this book especial value. Numerous short papers by Morgan and his coworkers appear in the different journals of record (especially *Am. Nat.*, *Jour. Exp. Zoöl.*, and *Science*).

Heredity and Sex.—The relations between heredity and sex, in sex determination and in sex linkage of characters in heredity, have received added confirmation during the year, showing that sex is determined by the nature of the gametes and not by external influences, while an increased number of instances of sex-linked and sex-limited characters have been investigated. The chief investigation is that of Morgan and his associates upon *Drosophila*, which in the main

confirms and extends the principles given in previous reports. A general work, *The Determination of Sex*, by Doncaster gives a good general review of the subject. Pearl and Salaman (*Am. Anth.*) show among Jewish peoples an interesting excess of male births, which they suggest may be due to faulty registration of the female births, but in no case can it be attributed to the fact that the Jewish female is taboo to the male at the menstrual period. The ratio found in the statistics from 1893 to 1901 is 1,361.6 males to 1,000 females, an unusually large disproportion in the sex ratios. East (*Am. Nat.*) gives data upon the phenomena of sterility. An interesting note of the year is that of a Buff Orpington hen that crowed (*Jour. Her.*). She was born normal, laid 110 eggs, and after a moult began to develop male characters and was observed to crow like the male of the same race. Post mortem examination showed no male organs, but disclosed a large ovarian tumor, which it was believed might have inhibited the normal internal secretions of the female glands, thereby allowing male characters to appear.

Applied Evolution: Plant and Animal Breeding.—In the records of the year from the agricultural experiment stations and in the different journals devoted to agricultural interests, there is shown an increasing use of the modern genetic methods of improvement, and in the production of desirable new varieties for economic uses, the older selection methods are rapidly giving place to the pure-line method, and to hybrid extractives producing positive results in shortened time and in more reliable condition as regards breeding true. Slocum (*Jour. Her.*) gives a good survey of the application of Mendelian principles in the field of poultry breeding, especially in egg production and in sex-linked traits; and Haynes (*ibid.*) a review of the breeding of hogs. Interesting data with regard to the breeding of zebu cattle in Tunisia are given by Roederer (*Jour. Her.*); and Haynes ("Effect of the Popular Sire in Dogs," *ibid.*); Popenoe ("Ancestry of the Goat," *ibid.*), Reis ("Cattle in Brazil," *ibid.*), and many others present the applied side of Mendelian principles in economic operations, the showing being most impressive and indicative of marked progress in the application of these principles. In plants, Hottes (*Jour. Her.*) presents the conditions in *Gladiolii*, and Shamel (*ibid.*), the history of the Washington navel orange and its introduction into California in 1869. Bailey's *Plant Breeding* is a good general survey of the principles at present employed in America, and Willsdorf's *Tierzuchtung* (Leipzig), of the principles as applied to animal breeding in Germany. The numerous publications from the economic side add much in the way of instances to the data available, but nothing in the way of principles, either in new developments or in the extension of existing ideas. The value of the practical results, however, is high.

Eugenics.—The application of the newer evolution principles to the problems of human society and race culture continues along the same lines as in the last five years, with the exception that the analysis of these problems by mass statistics and Galton's law increasingly gives place to the study of individual family lines of descent and the interpretation of the findings upon the basis of Mendelian principles. One cannot but wish that the data were often more critically sifted before being used, and that less emphatic and dogmatic generalizations were drawn, but on the whole the result is one of distinct progress and better understanding of human problems of race and society. Nothing really new in principle has appeared during the year. The publications center around the problems of "race suicide," the "sub-normal," "criminalistic," sex, and war as a eugenic factor. Many general works intended to convey the eugenic motive have appeared, and give data upon which to base some rational race breeding and mating reactions. Stone ("Eugenics and Marriage," *Jour. Tenn. State Med. Assoc.*) presents an effective survey of the topic for general reading. Jordan's *War's Aftermath* presents a preliminary study of the effects of war upon the southern states, the effects in the Balkans,

and so on, but it is unsatisfactory in that the economic side of the problem is too little considered, as are also the effects of migrations following armed disturbances. Rhodes' *The Next Generation* is easy reading, but often defective in statement of fact. Johnson and Stutzman ("Wellesley's Birth Rate," *Jour. Her.*) have gone over the data of the classes in Wellesley College from 1879 to 1888, and find that the birth rate is 0.83 to each graduate, whereas it ought to be, according to the authors, 3.7 children to each graduate. Further, only 60 per cent. of the total graduates have married. Other authors have investigated women's colleges with adverse "eugenic findings," which range all the way from the statement that "higher education makes a woman less fit and less sought after as a mate," to the naïve position of Johnson, that "at Wellesley no young men are allowed to call on a student during her one free day, Sunday." Sprague, in "Education and Race Suicide," (*Jour. Her.*), shows the excess of births in the foreign-born population, as compared with the native-born, the death rate per thousand in native-born from 1890 to 1910 being given as 18.3 and the birth rate as 13.3, and in the foreign-born, the death rate as 16.5 and the birth rate as 43.4. Higher education is considered as an important contributing cause. College women and women's colleges are eugenically bad: "Women's college graduates are not greatly sought after as mates . . . because they are not . . . prepared for the job of cooking, sanitation, nursing and child bearing, and are not seeking that mode of life except under especially favorable conditions."

The sub-normal in the population have received increased study during the year, and especially interesting is the census report on "Insane and Feeble-minded in Institutions in 1910," showing that the number is not increasing as is often asserted to be the case, but that the segregation of these unfortunates is increasing. Over 200,000 were in institutions in 1910, 40 per cent. being in almshouses. Interesting in the same line is the "Report of the Commission to Investigate Feeble-mindedness, Epilepsy, Insanity, and Other Conditions of Mental Defectiveness in Michigan" (see also XV, *Social and Mental Hygiene*). Davenport ("Inheritance of Bad Temper," Eug. Rec. Off.) gives the study of 165 wayward girls, and finds that "outbursts of temper," whether periodic or irregular and whether associated with epilepsy, hysteria or mania, are not inherited as a positive (dominant) trait, do not skip generations, and tend to appear in about half of the children of the affected parents. Rosenoff and Martin (*Jour. Her.*), after study of the offspring in ten insane families, are not able to reach a conclusion with regard to its inheritance. Popenoe (*Jour. Her.*) gives a good review of recent contributions to the investigations of feeble-minded condition.

Immigration and its effects upon the eugenic problem are treated by Coffer (*Jour. Her.*). Billings discusses "Oriental Immigration" (*ibid.*), especially upon the Pacific Coast, where he believes the immigration of Orientals to be of relatively little importance eugenically, owing to the rather rare intermarriage of the white and yellow races. Interesting data with regard to the effects of birth rank appear in the year. Gini (*Jour. Her.*) presents data to show that among Italian professors it is the first-born that is most frequently found in the leading position, rarely the later-born, while Pearson ("The Handicapping of the First-born") thinks that it is the second- and third-born that have the better chance in life. In much the same line is the investigation by Vasting of 75 German families, from which he concludes that marriage of a young man with a woman of mature years gives the most talented children. Also he concludes that a woman should not marry before 24, and no man contemplate matrimony after 30. The data presented are inadequate to prove the conclusions.

Much has been written upon eugenic legislation, most of the literature being a compilation of the enactments in different states. An almost endless array of publications of little or no importance have ap-

peared, mainly of an argumentative sort, serving to awaken interest among the people with regard to some of the most obvious and sound results that have come from evolution applied to human affairs.

ZOÖLOGY

H. E. Jordan

Systematic Zoölogy.—The Smithsonian Institution has issued Part 1 (Bull. 82) of Volume I of *A Monograph on the Existing Crinoids* by Austin Hobart Clark. This portion (389 pp.) deals mainly with the Comatulids. The systematic work is based broadly upon embryologic, morphologic and paleontologic data. The phylogenetic history thus traced is thought to lead back to Crustacea. The hypothetical ancestor is conceived as a barnacle-like form. Present-day Echinoderms are shown to combine primitive and highly specialized characters in a great variety of ways, a circumstance which would seem to have made intergrades impossible. From barnacles, the Echinoderms are believed to have diverged by a "broad saltation," which led to a free habit; and this condition, combined with the assumption of a pentamerous symmetry, is thought to have precluded intergrades, and thus resulted in the formation of two diverse stocks, the heteroradiate (sea-urchins, sea-cucumbers) and the astroradiate (star-fish, brittle stars).

Calkins (*Biol. Bull.*, xxix, 1) has described an interesting new gregarine obtained from the intestine of the marine annelid *Clymenella torquata*, which he names *Microtœniella*. It appears to combine protozoön with certain metazoön features.

Experimental Zoölogy.—Jacques Loeb (*ibid.*, xxix) has succeeded in producing fish embryos with blind or degenerate eyes by (1) heterogeneous hybridization, fertilizing the eggs of *Fundulus heteroclitus* with the sperm of *Menidia* (since such embryos commonly lack a circulation, the inference is suggested that the eye defect is due to the absence of a circulation); (2) by rearing pure-bred *Fundulus* embryos in sea water to which potassium cyanide has been added; (3) by exposing fertilized eggs of *Fundulus* to low temperatures. Since pure-bred *Fundulus* embryos reared in pure sea water in the dark develop normal eyes, the experiments indicate that the blindness of certain cave fish and salamanders is to be accounted for on the basis of internal mutational changes.

By centrifuging eggs of the frog *Rana sylvatica* during the early gastrula stage, Banta and Gortner (*Jour. Exp. Zoöl.*, xviii, 3) produced accessory tails in various situations and accessory appendages over the head of the larvæ. They interpret their results in terms of a dislocation of the tail anlages and their shifting to distant regions of the future embryos.

Werner (*Biol. Bull.*, xxviii, 1) has studied the influence of certain products of pathologic metabolism (urea, lactic acid, acetone, et al.) on the developing eggs of *Fundulus heteroclitus*. Monsters of various types resulted, including twins, dwarfs, hemiembryos, acardia, hydrocephalus, and cyclopia. In some embryos nothing could be observed but an eye. (See also XVIII, *Anatomy*.)

Painter (*Jour. Exp. Zoöl.*, xviii, 2) has made an experimental study of the cleavage process in sea-urchin eggs, which tends to show that there are "other factors at work in the egg besides simple mechanical causes." If these eggs are violently shaken a few minutes after fertilization, the centrosome may fail to divide. The subsequent cleavage of such monaster eggs is characterized by the appearance of one or more small cells (micromeres) at the eight-cell stage. In normally cleaving sea-urchin eggs the micromeres appear first at the 16-cell stage of development. Treatment of monaster eggs with phenyl methane, which inhibits nuclear division, was effective in moving the micromere formation forward even to the two-cell stage. These results seem to warrant the conclusions that

(*a*) at the time of fertilization progressive changes are initiated in the cytoplasm of the egg which go forward inde-

pendently of the nucleus and of the cleavage process; and (*b*) differentiation, as far as the formation of the micromere is concerned in the sea-urchin egg, is dependent upon cytoplasmic oxidation, the nucleus and the cleavage process playing no direct part here.

Laurens (*Jour. Exp. Zoöl.*, xviii, 4) has determined that the melanophores of *Amblystoma* larvae respond directly to photic, thermal and galvanic stimuli. Light and electric currents, moreover, act also indirectly upon the pigment cells, through the medium of spinal and sympathetic nerves. He concludes that the receptors of indirect light stimuli are nerve endings in the retina, probably unaided by cutaneous sensory endings.

Budington and Harvey (*Biol. Bull.*, xxviii, 5) studied the comparative physiology of the thyroid body by growing the ciliate protozoön forms, *Paramœcium* and *Stylonichia*, in culture media to which minute portions of pulverized gland tissue from a fish, a frog, a turtle, a chick or a cat were added, using division-rate as the index of specific effect. The gland tissue from the various classes of vertebrates employed produced essentially the same result. They conclude that the physiological qualities in the thyroid glands are constant and similar throughout the vertebrate phylum.

Hatai (*Jour. Exp. Zoöl.*, xviii, 1) reports the results of an extensive series of gonadectomies on the albino rat, made with special reference to the effect of this operation upon the growth of organs. Unilateral gonadectomy produced a practically perfect compensatory hyperplasia of the undisturbed sex-gland, and caused only very slight somatic alterations, mainly relatively lesser body length in the male. Bilateral gonadectomy (complete castration or complete spaying) results in an obliteration of differentiated secondary sexual characteristics, including body length and weight, bone weight and length, length of tail, weight of central nervous system, size of sex-glands, size of the thyroid, the thymus, the suprarenals and the hypophysis. Gonadectomy tends to increase the resemblance between the two sexes, or "to produce the secondary characters found in the opposite sex."

Whitney has continued his experiments on sex control in the parthenogenetic rotifer *Hydatina senta*. He now shows (*ibid.*, xvii, 4) that the kind of food has a specific effect upon sex production in this form. By changing the diet of female-producing females from the protozoön *Polytoma* to *Dunaliella*, a high percentage of male-producing daughters resulted; a reversal of diet produced also a reversal of sex potency, a process which could be repeated. The influence of the diet acting upon the grandmother thus determines the sex of the grandchildren. Whitney concludes that "the regulation of the sex ratio in the parthenogenetic reproduction of *Hydatina senta* therefore can be controlled by food conditions." Identical results have been obtained (*Biol. Bull.*, xxix, 1) also with an English strain of *Hydatina senta*, with which the diet was changed from the colorless protozoön *Polytoma* to the green protozoön *Chlamydomonas*.

Harrison (*Jour. Exp. Zoöl.*, xvii, 4) adds further confirmatory observations, from tissue-culture experiments, to the hypothesis that embryonic nerve fibers are guided in their growth towards the structure which they come to innervate through a steretropic (thigmotactic) response of the neuroplasm. The possibility, however, still remains that the end result is obtained through a coöperation of chemotropic and thigmotropic phenomena.

By securing conjugation in a mass subculture of his pedigreed race of *Paramœcium aurelia* in which the environmental conditions were rendered unfavorable, Woodruff (*ibid.*, xvi) demonstrated that Calkins' suggestion (*A. Y. B.*, 1913, p. 679), that the longevity of this culture (over 4,500 generations in June, 1914) despite non-conjugation was to be explained in terms of a non-conjugating variety, is untenable. Woodruff had early noted (1908) complex nuclear changes presumably correlated with division rhythms in his cultures. Erdmann (1913) had noted similar conditions in *Amœba diploidea*, and suggested that a relation exists between sexual phenomena and division rhythms. Woodruff and Erdmann (*ibid.*, xvii, 4) have collabor-

ated in a study of the daily cytologic changes in Woodruff's race of *Paramœcium aurelia*. They have discovered that

> the rhythms in the division rate are the physiological expression of internal phenomena which involve the formation of a complete new nuclear apparatus, by a definite sequence of normal morphological changes which simulate conjugation. This nuclear organization, in essence, consists of a gradual disintegration and absorption of the macronucleus in the cytoplasm. Simultaneously a multiplication of the micronuclei is in progress. Certain of the resulting micronuclei degenerate while the remaining one or two form the new macronuclear and micronuclear apparatus. This results in the reorganization of the cell without the fusion of two animals.

The reorganization process or "endomixis" is coincident with the low point between two rhythms. In the opportunity afforded for variation, endomixis, conjugation and fertilization are essentially similar processes.

Fertilization.—Among the most important contributions of recent years are Lillie's studies on fertilization. From a chemical viewpoint the phenomenon of fertilization, or the initiation of development in the egg, is conceived to depend upon the interaction of three substances: (1) "sperm receptors," which activate an egg-substance, (2) "fertilizin," which becomes bound with (3) "egg receptors." On the basis of new investigations Lillie (*Biol. Bull.*, xxviii, 1) answers the suggestions of Loeb (*A. Y. B.*, 1914, p. 647) that the "agglutination" phenomenon of the sperm of *Arbacia* which Lillie uses as an indicator of the presence of fertilizin is a "tropistic reaction," analogous to the "cluster-formation" which Loeb described for a California sea-urchin (*Strongylocentrotus*). Agglutination differs from the aggregations characteristic of tropistic phenomena in that the sperm actually adhere to each other; and from mass-coagulation in that agglutination is reversible and non-toxic. As to the source of the agglutinizing substance, Lillie demonstrates that Loeb's suggestion that it is a constituent of the egg-jelly is untenable. The fertilizin is shown to be a secretion of the egg cytoplasm, appearing first after the dissolution of the germinal vesicle. Loeb's observation that jelly-free eggs do not generally fertilize is explained by Lillie's experiments which show that the process of jelly solution by HCl causes disintegration of the mass of the eggs. Such broken-down eggs liberate a substance (anti-fertilizin) which neutralizes the sperm agglutinating action of the fertilizin. In masses of eggs containing many disintegrated eggs, the sperm-agglutinating secretion (fertilizin) of the normal eggs may become masked. Jelly-free uninjured eggs secrete fertilizin to the same extent as when the chorion is present; immediately after fertilization the secretion disappears absolutely. Lillie reëmphasizes the point that the phenomenon of agglutination in *Arbacia* is simply an incidental sign of the combination of egg and sperm derivatives, which combination may occur in certain forms without agglutination. The heart of Lillie's theory of fertilization inheres in the conception that initiation of development is essentially a phenomenon of activation of a substance contained within the eggs; the theory is not dependent upon the identification of fertilizin and sperm-agglutinating substances, though a quite considerable body of data supports the view of identity.

Richards and Woodward (*ibid.*, 3) report results of experiments designed to test the effect of X-rays on the fertilizin of star-fish and sea-urchin eggs. In general, weak radiation is shown to accelerate sperm agglutination and autoparthenogenetic development, strong radiation to inhibit them. The effect of X-radiation on fertilizin seems to be similar to its effect on enzymes.

Glaser (*ibid.*) has raised the question whether a single spermatozoön is capable of initiating development in *Arbacia*. No doubt is made of the large body of ascertained facts which show that at normal fertilization only one sperm nucleus unites with the egg nucleus; but certain observations made in connection with comparative studies on the volumes of fertilized and unfertilized eggs, indicated that a single sperm was not adequate to effect the changes in the surface films of the egg which permit of the passage of a spermatozoön, which changes are subsequently indicated by

a fertilization membrane. Lillie (*ibid.*, 4) takes up this problem and by a series of experiments arrives at the conclusion that the penetration of the egg is not solely a function of motility of the spermatozoön, and that "the individual spermatozoa in suspension tend to loose their fertilizing material, so that an increasing proportion of these spermatozoa become absolutely ineffective whatever their motility." Egg penetration follows, it does not precede, liberation of sperm (receptor) material.

Just (*ibid.*, 1) adds another link to the chain of evidence supportive of Lillie's theory that fertilization is essentially a process of egg activation, by his results of experiments in artificial fertilization of *Nereis* eggs. These eggs can be caused to initiate development by a sudden elevation of temperature; but when the eggs have been washed free of their fertilizin, they cannot be made thus to develop.

Moore (*ibid.*, 5) shows by a series of experiments that normally fertilized sea-urchin eggs are affected injuriously by hypertonic sea water; such injurious action being most pronounced just preceding and during cytoplasmic division, the susceptibility being rhythmic. Upon eggs caused to develop parthenogenetically by the action of butyric acid, hypertonic sea water, applied for a brief time, has a beneficial effect, also rhythmical in character. Herlant had earlier observed a similar rhythmicity in developmental response of fatty acid-treated eggs to hypertonic sea water. Moore explains this rhythmic susceptibility to hypertonic sea water in terms of Loeb's interpretation of artificial parthenogenesis of sea-urchin eggs treated with fatty acid: the formation of the artificial membrane initiates chemical phenomena which begin cell division, the successful normal culmination of which demands an additional treatment with hypertonic sea water which exerts a corrective or protective action in inhibiting the deleterious effect of toxic substances during cleavage; since the underlying physico-chemical changes are rhythmical, the susceptibility to the hypertonic sea water should also be rhythmic.

R. S. Lillie (*ibid.*) shows that the effects of exposure of maturing unfertilized star-fish eggs to high temperatures (32° C.) and to weak butyric acid solutions (n/260) vary with the time of exposure in a similar manner: brief exposure causes membrane formation followed by disintegration, longer exposure results in cleavage and development to larval stages, and still longer exposure produces cytolysis without development. Since the effects produced are in all essential respects identical, he infers that the same physico-chemical process is initiated in the egg by the two different treatments, development being essentially a physiological process dependent upon chemical reactions which may apparently be inaugurated in certain special cases either by heat or by acids. He interprets the process in terms of "degelation-effects in the surface layer of the egg; increase of permeability, with consequent depolarization, is the result of the change." He shows further that a second treatment by high temperatures or butyric acid produces the same effect in the star-fish egg after the initial treatment resulting in membrane formation, as does the usual treatment with hypertonic sea water. In this respect the star-fish egg differs considerably from the sea-urchin egg, though the conditions underlying initiation of development are believed to be fundamentally similar in both types of eggs. He concludes "that hypertonic sea water is favorable not because it exerts a 'corrective' action different from that of the membrane-forming agent, but simply because it enables the process started by the first treatment and arrested at an unfinished stage to proceed to its completion." He advances a new hypothesis of the mode of action of the hypertonic sea water treatment following membrane formation by butyric acid, namely, a dehydration phenomenon (dehydrolysis) upon which may depend the supplementary oxidative syntheses necessary for development.

By a series of experiments with *Arbacia* eggs, Heilbrun (*ibid.*, xxix, 3) shows that membrane formation in artificial parthenogenesis results from a lowering of the surface ten-

sion of the vitelline membrane, causing a pushing away of the membrane from the egg. The formation of a fertilization membrane through the agency of the sperm proceeds in a similar manner, due to the action of an acid, which causes the swelling of the membrane. Initiation of development is thought to be preceded by gelation of certain egg substances.

Cytology.—Cytologic investigations continue to attract a large amount of effort and attention on the part of American zoölogists. This is due in large part to the postulated fundamental and interpretive relationship of cytologic data to experimental studies of heredity, which subject is now the cardinal zoölogic interest.

McClung (*Jour. Morph.*, xxv, 4) has reviewed the cytologic data touching orthopteran spermatogenesis in the light of his own intensive studies of the chromosomes of various orthopteran species. He succeeds in establishing a gratifying general concordance among the mass of recorded conflicting details concerning both the euchromosomes (autosomes) and the heterochromosomes (allosomes) during the maturation divisions. Much confusion is removed by his demonstration that the result of the second spermatocyte division is neither entirely equatorial nor segregative (reductional).

Robertson (*ibid.*, xxvi, 1) reports inequalities of homologous chromosomes in the germ cells of certain orthoptera (two cases each in two species of different genera). These are significant as suggesting a possible explanation of the origin and Mendelian behavior of certain variations, *e.g.*, in domesticated animals and in the evening primrose (*Oenothera Lamarckiana*). The inequality is interpreted as due to a loss of substance, not unequal growth (Hartman), and the presumed deficiency is proposed as the basis of the loss of unit factors in heredity. A correlative assumption is made as an explanation of certain inheritance phenomena in animals (yellow coat color of mouse) and plants, and as a working hypothesis in genetic research, that

a defective chromosome may continue to give a trait which is recessive to the normal condition until the deficiency becomes so great that the homozygous zygote cannot develop. At that point the defect becomes dominant to the normal condition and individuals can exist only in the heterozygous or normal condition.

Carrie I. Woolsey (*Biol. Bull.*, xxviii, 4) has studied the phenomenon of linkage in relation to the numerical reduction and variation of the chromosomes among the species of a genus. The material investigated included three species of a genus of the Jamaican *Locustidæ*. Ten individuals of these three species are shown to contain a uniform male diploid number of 35 chromosomes. Multiple chromosomes, similar to those first described by McClung (1905) in the grasshopper *Mermiria*, but only closely associated, and not connected with the accessory chromosome, appear in two of the specimens, and a transitional condition of chromosome union appears in one specimen.

Payne (*Jour. Morph.*, xxv, 4) has made a renewed study of the chromosomal variations in the earwig *Forficula*, with a view to testing Steven's earlier suggestion that *auricularia* is a "composite" species. He shows that the numerical variations result from a failure on the part of some of the spermatogonial chromosomes to pair at synapsis, and the consequent appearance of such chromosomes in the spermatocyte divisions as univalent instead of bivalent chromosomes.

Pauline H. Dederer's work (*ibid.*, xxvi, 1) on the oögenesis of *Philosamia cynthia*, a moth, touches three cardinal problems of cytologic research: (1) the "individuality of the chromosomes"; (2) amitosis in germ cells; and (3) the chromosomal basis of sex differentiation. Miss Dederer shows that in *Philosamia* the chromosomes lose their "visible identity" during the growth period, all trace of chromatin having disappeared. The essence of the hypothesis of the "individuality of the chromosomes," apparently well supported by a considerable body of cytologic data, may however be saved as a principle of general applicability by assimilation with the conception of the "genetic continuity of chromosomes" (Wil-

son), against which doctrine there is no crucial countervailing evidence. Even the indubitable occurrence of amitosis in certain germ cells could not be properly held to furnish such evidence; the fundamental basis of a chromosome may be something other than "chromatin"; moreover, it has not yet been demonstrated that germ cells which have divided amitotically remain normally functional. On the other hand, amitosis in germ cells is conceivably an efficient basis for variations (mutations). Amitosis is said not to occur in the germ cells of *Philosamia*. *Philosamia* is of especial interest also in connection with present theories of sex determination. To the principle, based upon extensive cytologic observations, that with respect to the chromosomal complex the male is heterogametic, *i.e.*, has two kinds of spermatozoa, the female homogametic, only two exceptions have thus far been recorded (exclusive of parthenogenetic forms). In certain other groups, *e.g.*, birds, the experimental evidence indicates digamy in the female, but the cytologic findings, while apparently showing a nuclear dimorphism in the male gametes, unfortunately admit of contradictory interpretations. The two exceptions specified are: (1) That reported by Baltzer (1909) for certain sea-urchins. Here the female was said to be the heterogametic sex. Tennent (1912) showed, however, that in other forms the male must be interpreted as the heterogametic sex; and, after reinvestigation of his material, Baltzer (1913) announced its conformity to Tennent's description. (2) That reported by Siler (*Archiv für Zellf.*, xiii, 2) for the moth *Phragmatobia fuliginosa* and certain other lepidoptera in which an X-chromosome is described in half the eggs. The two classes of eggs are said to contain respectively 27 and 28 chromosomes. In *Philosamia* Miss Dederer finds no such evidence for gametic dimorphism, either male or female; in both sexes the bivalent postsynaptic number is 13, the somatic number 26. But no conclusive evidence accrues from her study for either the presence or the absence of an X-Y pair of chromosomes. In certain races of the lepidopteran *Abraxis*, Doncaster (*Quart. Jour. Micr. Sci.*, Feb., 1914) also reports female sex-heterozygotes; one-half of the eggs are said to contain 27 chromosomes, the other half 28; the somatic number of the male is given as 56, that of the female as 55 chromosomes.

Of interest in this connection is Fasten's (*Jour. Morph.*, xxv, 4) description of the origin of the spermatogonial chromosomes by fragmentation of the two or three large chromatic nucleoli or "karyosomes," and of the behavior of the two postsynaptic "chromatoid bodies" in the spermatogenesis of the American crayfish. Three types of spermatids are produced according as both, or only one, or neither, of the chromatoid bodies pass to one pole of the spermatocyte spindle: spermatids with two, one, or no chromatoid bodies respectively. This work is of especial significance because of its support to theories of sex determination in terms of differential amounts of chromatin, rather than in terms of specific chromosomes.

Wieman (*Biol. Bull.*, xxviii, 1) reports observations on the spermatogenesis of the gall-fly, *Dryophanta erinacei*. The primary spermatocyte division consists only in the pinching off of a globule of chromatin-free cytoplasm, the so-called "polar body." The 12 chromosomes (haploid number) divide only in the second maturation mitosis, apparently by longitudinal fission. Neither heterochromosomes nor chromatoid bodies were identified.

Kornhauser (*Archiv für Zellf.*, xiii, 3) has reinvestigated the gametogenesis of copepods. His work deals chiefly with the semiparasitic form, *Hersilia apodiformis*. Copepods have furnished much of the cytologic data upon which the conception of chromosome reduction in the maturation mitoses has been built, and from which the Weismannian hypothesis of germplasm mechanism has received considerable support. Copepod material has been regarded as furnishing one of the best examples of telosynapsis (metasyndesis), a conclusion following from the interpretation of the characteristic transverse suture (*Querkerbe*) of the chromosomes as the point of end-to-end

union of bivalent chromosomes. Kornhauser has shown that while the primordial germ cells contain the diploid number of chromosomes, the majority, nevertheless, are also marked by such sutures. His evidence tends to show that synapsis occurs by side-to-side union, and that the *Querkerbe* has no significance in terms of chromosome pairing. Both spermatogonia and oögonia contain 24 chromosomes, two of which show no transverse suture; in at least two pairs of chromosomes the suture is said not to be across the middle. The haploid oöcyte number is 12, one small tetrad lacking the suture. A heterochromosome pair (X-Y pair) occurs in the primary spermatocytes; here the haploid number varies from 12 to 13, the latter the predominating number, the variation depending upon whether the heterochromosomes have paired or not. Twelve chromosomes are said to appear in the secondary spermatocyte, 11 showing sutures. Of the 24 chromosomes of the blastulae the majority again are said to exhibit the transverse markings. In the first maturation mitosis each daughter cell ordinarily receives one of the heterochromosomes, but exceptionally one may be halved by the division of the cytoplasm, giving to the sister cells 12 and 13 chromosomes respectively; one group with only a portion of one member of the pair, another with both members of the pair, of heterochromosomes. It is suggested that the latter condition might account for rare cases of hermaphroditism in *Hersilia*.

Painter has published a comprehensive paper on spermatogenesis in spiders, including species of 13 families (*Zoöl. Jahrb.*, lxxxiii, 4). A double accessory chromosome occurs, constant in behavior and appearance, in all the families studied, including the most primitive as well as the highly specialized forms, suggesting an identity of function throughout the phylogenetic history of spiders, probably that of sex determination. No Y-element was found; the accessory chromosome consists of two X-elements (derived from two spermatogonial chromosomes) which behave during maturation as a single structure, passing undivided to one pole in the first mitosis, dividing in the second, and thus producing two types of spermatozoa depending upon the presence or absence of an accessory chromosome. Various types of supernumerary chromosome—"ctetosomes" and "planosomes"—are also described. The ctetosomes are invariably associated with the accessory chromosomes during the first maturation division, and pass undivided with that body to one pole of the cell. The planosomes behave as independent bodies; they may or may not divide, and are very irregularly distributed in the maturation mitoses, apparently fortuitously. It is suggested that the ctetosomes are derived from a Y-element, the planosomes from degenerating microchromosomes. The ctetosomes are believed to play a part in heredity; but regarding the function of the planosome, no suggestion appears.

Mary T. Harman gives a description (*Biol. Bull.*, xxix, 4) of the spermogenic history of the accessory chromosome in the grasshopper, *Paratettix leuconotus-leucothorax*.

Wallin (*Anat. Rec.*, ix, 6) describes acidophil nuclei and chromosomes in the mesenchyma and blood cells of the lamprey larva. In certain dividing cells at telophase one of the daughter chromosome-groups is basophil, the other acidophil. Both in the case of the resting and the dividing cells, the basic and acid nuclei and chromosome-groups are morphologically alike. These differences in staining reaction are probably to be interpreted in terms of different functional phases.

Hooker (*ibid.*) has investigated the cytology of pigment production in mesenchyma and epithelial cells of frog embryos by means of plasma cultures, dissections of living embryos, and serial sections. The evidence is opposed to the theory (Meirowsky, 1908, Szily, 1911, *et al.*) that the melanic granules are extruded from the nucleus, perhaps as chromatin derivatives, into the cytoplasm where they undergo chemical changes in the formation of melanic pigment. The first pigment granules appear in the cytoplasm along the line of contact between the nucleus and the cytoplasm; a significant fact, since the

nucleus is the chief oxidative center of the cell. This observation harmonizes with the results of the recent experimental work on the production of animal pigments and of artificial melanins, which indicates that tissue melanins are produced by the action of a nuclear oxidase (tyrosinase) upon a cytoplasmic chromogen (tyrosin), the latter perhaps absorbed from the tissue juices or the blood.

Sutherland (*Biol. Bull.*, xxviii, 3) has made a study of the nuclear changes in the regenerating spinal cord of the frog tadpole. New nervous tissue is formed by cells migrating from the cut edge of the cord. Cell proliferation is entirely mitotic. Sparse amitotic figures occur only in degenerating fragmenting cord cells.

Zelney and Faust (*Jour. Exp. Zoöl.*, xviii, 2) have made a statistical study of the size differences in length of the sperm head in 15 species of animals in which heterochromosomes have been reported. Variation curves of the frequency distribution of head-length were plotted; all the curves were bimodal, indicating two size groups.

This method of attacking the problem of determining the presence or absence of heterochromosomes in the male gametes promises much toward the solution of the problems of sex-determination. It has now been shown, by detailed cytologic studies of several scores of animals, that a dimorphism of spermatozoa, dependent upon heterochromosomes, is widespread, and that this dimorphism is correlated with sex. In many cases, especially among mammals, cytologic technics have yielded only uncertain and conflicting results. The male sex cells of mammals are singularly refractory to cytologic attack. The information desired concerns primarily the presence or absence of "sex chromosomes"; the details of form, size and method of distribution seem at this stage of secondary importance. Zelney and Faust's results confirm Jordan's earlier conclusion regarding the presence of a sex-chromosome in certain mammals, based upon the appearance of a characteristic chromatin (chromosome) nucleolus in the growing primary spermatocytes; but that the latter method may in certain cases be untrustworthy is indicated by the conflicting results obtained by Jordan and by Wodsadalek in their studies of the pigs' testes. Zelney and Faust's method of determination of the presence of a sex-chromosome seems to meet the demands admirably. If a bimodal frequency curve of head-lengths results, a dimorphism of spermatozoa and the presence of heterochromosomes seem established; if the head-lengths of the sperm plot a unimodal frequency curve such dimorphism may be lacking, and in such cases the inference that here the female is the digametic sex may furnish a good working hypothesis, pending more intensive cytologic investigations. The method of Zelney and Faust should be applied to birds. Its limitation is its practicable inapplicability to cases of essential size equality of possible heterochromosomes. (See also XXVIII, *Anatomy.*)

Embryology.—Tannreuter (*Jour. Morph.*, xxvi, 2) has published a comprehensive paper on the embryology of *Bdellodrilus philadelphicus*, an annelid worm, parasitic on the fresh water crayfish. He traces the complete cell lineage and shows that the early cleavage planes, as in many other forms, are definitely related to the future organs of the adult. Gastrulation is of the epibolic type; and the trochophore stage is said to be completely suppressed.

Just (*ibid.*) reports that in the annelids *Nereis* and *Platynereis* the middle piece of the spermatozoön does not enter the egg at the time of fertilization, and concludes that this element in these worms can play neither a hereditary rôle (through mitochondria) nor a dynamic rôle, through a centrosome, in the mechanics of fertilization.

Kepner and Cash (*ibid.*) have studied the structure and development of the ciliated pits of the flatworm *Stenostoma*. They show that the organ arises as a depression in a plate of modified epidermal cells, some of which migrate beneath the fundus to form the pit-ganglion. They conclude that the pit functions as "a tester of the chemical nature of the water which passes through or over it as do the olfactory organs of the fish."

BOTANY

B. M. Duggar

General.—A careful consideration of the progress in botanical investigation in 1915 points distinctly to development along four lines particularly, namely, physiology, morphology and taxonomy of the fungi, and plant pathology. Consistent advances have also been made in the direction of the morphology and taxonomy of the higher plants, while relatively fewer studies have been completed upon the bryophytes and pteridophytes (mosses, ferns, etc.) or upon the algæ. Accordingly, greater attention may here be devoted to the topics especially emphasized, with the exception of plant pathology, which field of work is discussed elsewhere (see XVII, *Diseases of Plants*).

During the convocation week of the American Association for the Advancement of Science at Philadelphia, Dec. 28, 1914, to Jan. 2, an extensive botanical programme was presented; likewise, an attractive scientific programme was arranged for botanists at the San Francisco summer meeting of the Association. In addition, the twentieth anniversary of the establishment of the New York Botanical Garden was commemorated by a meeting in New York City, Sept. 6-11, which was practically as well attended as the A. A. A. S. meeting.

Physiology.—Schreiner and Skinner (*Bot. Gaz.*, lix, 445-463) have demonstrated some interesting relations between the action of glycocoll on plants and the amount of various mineral nutrients absorbed in its presence. Confirming and extending the important findings with respect to the toxic action of illuminating gas by Knight, Crocker and others, Harvey and Rose (*ibid.*, lx, 27) establish the probability that in the soil ethylene is for roots the harmful constituent of illuminating gas. They also show that low concentrations result in abnormalities while higher concentrations kill. Harris (*Jour. Agr. Res.*, v, 1) finds that cereals are among the crops most resistent to "alkali" salts as determined by studies upon germination. "Alkali" prolongs the period of germination. Contrary to earlier results of others he finds that the anion determines the toxicity in soils, also that sodium chloride is the most toxic of the salts usually present. Moreover, antagonism between the various anions present is not so great when the plants are grown in soils as when in solution cultures. In recent times renewed attention has been given to the problem of the importance of sulphur in the nutrition of plants. Brown and Kellogg (*Centralbl. f. Bakt.*, II., xliii, 552) and Hart and Tottingham (*Jour. Agr. Res.*, v, 233) have further emphasized the importance of sulphur and the results confirm the opinion that relatively high sulphur content is more important for crops than for the normal bacterial processes taking place in the soil (see also XXIV, *Agricultural Chemistry*). In studying the relation of wheat to mineral nutrients, Shive (*Am. Jour. Bot.*, ii, 157) has found a tri-salt solution superior to the four-salt solution advised by Tottingham (1913).

The causes leading to the occurrence of soil areas, or spots, with such high nitrate content as has been found to be injurious to vegetation, especially in Utah and Colorado, offer problems of much scientific and practical importance. Headden, Sackett, and others (bulletins of the Colorado Agr. Exp. Sta.) have maintained that these "niter spots" are the result of intensified bacterial activities, especially of nitrogen-fixing bacteria, under the semi-arid conditions (*A. Y. B.*, 1914, p. 623). Stewart and others (bulletins of the Utah Agr. Exp. Sta.) have found (1) that the accumulation of nitrates is related to the accumulation of chlorides, so that the same causes are considered operative; and (2) that the nitrogen content of much of the rock is sufficient to account for the niter spots upon the disintegration of the rock and the transfer of the soluble salts. The amount of nitrate in these spots is never in such concentration as in the workable Chilian deposits. (See also XXIV, *Agricultural Chemistry.*)

In a series of short articles Osterhout (*Bot. Gaz.*, lix, 242, 317, 464) has shown among other things that bivalent and trivalent kations decrease the permeability of protoplasm as determined by changes in the electrical conductivity, using the seaweed *Laminaria* as an index. He also indicates that great increase or diminution in permeability may occur without injury. In an extensive paper Merrill (*Ann. Mo. Bot. Gard.*, ii, 507) reports the results of an elaborate series of experiments and determinations regarding the effects of various injurious agents upon plants, as shown by the exosmosis of electrolytes. Through the study of the changes in the electrical conductivity of water in which treated plants were immersed, striking exosmotic effects were demonstrated, and it was found that this method gives a delicate and reliable measure of the effects of deleterious agents. Employing the same method he (*ibid.*, 459) subjected to experimental study the diosmotic relations of plants grown for varying intervals in distilled water, and arrives at the conclusion that only in the incipiency of the disorders in this medium are the food relations important. Stewart (*Jour. Agr. Res.*, iv, 31) and Hoagland (*ibid.*, 39) have studied the composition of Pacific coast kelps, and it is found that much of the nitrogen is in non-protein form, of the iodine only a small part is organically combined, while there is a relatively high content of organic sulphur. The distillation products are of no importance and the food value is low. The intensity of the action of digestion and other ferments in marine algæ have yielded some results of special significance. Davis (*Ann. Mo. Bot. Gard.*, ii, 771) finds in certain forms ferments digesting starch and related carbohydrates but no enzymes digesting either cane or malt sugar, and likewise none digesting celluloses or the simple esters. All enzymes show a low rate of action, and the presence of inhibiting agents is suggested. It is reported (*Jour. Agr. Res.*, iv, 331) by Hasselbring and Hawkins that while the sugar content of sweet potatoes during the growing period is low, there is an increase after harvesting, cane sugar appearing in larger quantity. Rose (*Bot. Gaz.*, lx, 55) emphasizes the inverse relation of oxydase activity and acidity, establishing the point that oxydase action in the bark of diseased apple twigs (affected with Illinois canker) is greater than that of healthy bark. The sap of *Echinocactus Wislizeni* and of *Carnegiea gigantea* exhibits, according to Long (*Plant World*, xviii, 261), a diurnal variation in acidity, the higher content occurring in the early morning as an accumulation resulting from carbohydrate metabolism during the night. In consequence of photolysis and the higher temperature, the acidity diminishes during the day. The differences in acid content are more pronounced in the external tissues.

Continuing his investigations of the rest period, Howard (Mo. Agr. Exp. Sta., Res. Bulls. 15 and 16) finds that most bulbous plants exhibit a summer rest often difficult to break by the usual means. Those herbaceous perennials having a definite rest seem capable of growth after freezing or etherization. The bud is the organ primarily affected. Colloid hydration and growth are discussed by Long (*Bot. Gaz.*, lix, 491). In the latitude of Ithaca, N. Y., Brown (*ibid.*, 197) finds cell growth in *Pinus strobus* to take place the last of April followed by elongation later, while Kirkwood (*Torreya*, xiv, 115), studying *Pinus ponderosa* during a five-year growth period, finds growth correlated with precipitation during the preceding growing season. Studying *Bryophyllum calycinum*, Loeb (*Bot. Gaz.*, lx, 249) confirms the old view that flow of material is related to both inhibition of regeneration and to correlation; thus, if an organ *a* inhibits regeneration in another *b*, then *b* often favors regeneration in *a*.

Seasonal movements in *Opuntia* and *Carnegiea* have been correlated by Shreve (*Plant World*, xviii, 297, 331) with turgidity changes. *Opuntia versicolor* exhibits a short period movement influenced by various factors. Benedict (Cornell Univ. Agr. Exp. Sta., Memoir VII, 275) finds evidence for senile degeneration as a result of histological study upon leaves from plants of different ages,

using particularly *Vitis vulpina*. Decreasing permeability as a result of the accumulation of toxic bodies is a suggestion as to a cause of senescence.

Ecology.—Nichols (*Bull. Torr. Bot. Club*, xlii, 169) continuing his important work on the vegetation of Connecticut, gives an account of plant societies in the lowlands. From this study it is concluded that in relatively recent geological times the vegetation of the region was much like that of Northern Great Britain to-day. In general, a bog is a relict swamp type. The Lake Tahoe region, Washington, has been studied with respect to the ecological relations by Smiley (*Bot. Gaz.*, lix, 265), who emphasizes the different life zones. Data on evaporation and plant succession for southeastern Washington have been contributed by Weaver (*Plant World*, xvii, 273), who finds the succession is from prairie to a climax forest of cedar. He also reports a study of the root systems of prairie plants (*ibid.*, xviii, 227, 273). Notes on the botanical conditions in the various Galapagos Islands are given by Stewart (*Wis. Acad. of Sci. Trans.*, xviii, 272). Alpine plant geography has received further attention from Rydberg (*Bull. Torr. Bot. Club*, xli, 89, 459) in which he discusses the probable origin of the flora. Huels (*Wis. Geol. and Nat. Hist. Surv.*, xiv, 1) has contributed an important paper on the peat resources of Wisconsin which throws some light on the ecological conditions which have obtained in the section studied.

Morphology and Taxonomy, Seed Plants.—In the field of morphology the more pronounced activity has characterized the study of gymnosperms. Burlingame (*Bot. Gaz.*, lx, 1, 40) reviews the evidence regarding the lycopod and cordaitean origin of the Araucarians, and his own studies suggest a derivation from either one or the other of these rather than from the Abietineæ. A detailed investigation of the development of the male gametophyte of *Picea* is reported by Hutchinson (*ibid.*, lix, 287), while further interesting features of the vascular anatomy of the megasporophylls of conifers is given by Aise (*ibid.*, lx, 277). Grossenbacher (*Am. Jour. Bot.*, i, 522) and Bailey and Shepard (*Bot. Gaz.*, lx, 66) discuss Sanio's laws for variation in the size of coniferous tracheids.

Regarding the phylogeny of the angiosperms, Sinnott and Bailey (*Am. Jour. Bot.*, ii, 1) invoke evidence from leaf study, developing as a leading idea the point that this organ in the primitive angiosperm was palmate and probably lobed, being perhaps derived from palmate conifers and monocotyledons through some palmate dicotyledonous type. Studying the lower eocene flora of the Mississippi embayment, Berry (*Proc. Am. Phil. Soc.*, liii, 129) has given particular attention to the distribution of *Myrtaceæ*, with 3,100 living species. The study sheds important light on the probable primitive types and on the widespread distribution of the family in Europe and America during the cretaceous and tertiary.

Among continued studies in taxonomy, mention may be made of the following: Merrill (*Philippine Jour. of Sci.*, x (sec. C), 227, 265, 287), on the Wenzel collection and on the *Anonaceæ;* the critical review of Balls (*Bot. Gaz.*, lx, 45) on North American willows; of Rydberg (*Bull. Torr. Bot. Club*, xlii, 117) on the genus *Rubus* and on allied forms; of Bicknell (*ibid.*, 330, 549); of Britton (*ibid.*, 487) on West Indian plants; and of Sherff (*Bot. Gaz.*, lix, 301) in the direction of a monograph of the genus *Bidens*. An account of new species and varieties of *Behai*, together with a key of all the species, is contributed by Griggs (*Bull. Torr. Bot. Club*, xlii, 315). Greenman (*Ann. Mo. Bot. Gard.*, ii, 573) has begun a monograph of Central and North American Senecios. The nineteenth volume of contributions from the National Herbarium is a flora of New Mexico by Wooton and Standley, enumerating 3,000 species. The ecological relations of these species are omitted in the flora, but discussed by Bailey (*North American Fauna*, No. 35) and by Wooton (U. S. Dept. of Agr., Bull. 211). Among other manuals may be mentioned the following: a useful handbook of the trees of Texas, arranged by Lewis (Univ. of Texas, Bull. 22); an elementary flora of the Northwest, intended particu-

larly for school work, contributed by Frye and Rigg; and an extensive handbook of weeds, of special interest to agriculturists and teachers, prepared by Ada C. Georgia.

Morphology and Taxonomy, Fungi.—Numerous and extensive contributions have been made to a study of the fungi. In the lower groups more attention has been paid to special morphology, while in the higher groups, especially in the Basidiomycetes, morphology has been necessarily the base upon which the more critical taxonomic study has developed. Development, including the origin of the veil, gills, etc., is the feature of Atkinson's (*Ann. Myc.*, xii, 369, 346; *Myc. Centralbl.*, v, 13) interesting studies in the Agaricaceæ. A critical investigation of certain difficult groups of species in the Polyporaceæ has been made by Overholts (*Ann. Mo. Bot. Gard.*, ii, 667) and he has likewise developed a manual of the polypores of the middle western United States (*Wash. Univ. Studies*, iii (Pt. 1, No. 1), 1). The Polyporaceæ of Wisconsin have been studied by Newman (Wis. Geol. and Nat. Hist. Surv., Bull. 33, 1), the section *Apus* of *Polyporus* and the genus *Fomes* by Lloyd (Cincinnati), while Murrill (New York) has contributed booklets on tropical, western, northern, and southern polypores. Other studies in the Agaricaceæ include those of Murrill (*Mycologia*, vii, 256; *N. Am. Flora*, ix, 237) and Harper (*Wis. Acad. Sci. Trans.*, xvii, 1011, 1142). Contributions toward a monograph of the Thelephoraceæ are being continued by Burt (*Ann. Mo. Bot. Gard.*, ii, 627, 731), who discusses the genera *Tremellodendron*, *Eichleriella*, *Sebacina*, and *Exobasidium*. *Rhizoctonia Solani* (*Corticium vagum*) and *R. Crocorum* (*R. violacea*) are contrasted morphologically and pathologically by Duggar (*ibid.*, 403). Arthur (*Mycologia*, vii, 61) reports the work of three seasons in the cultures of Uredineæ.

The most important monograph in the Ascomycetes division of the fungi includes the genera *Chætomium* and *Ascotricha* by Chivers (*Mem. Torr. Bot. Club*, xiv, 155). Thaxter (*Am. Acad. Arts and Sci.*, l, 17-50, li, 1; *Bot. Gaz.*, lviii, 235) has added to the already extensive flora which he, especially, has developed of insect-inhabiting fungi. Thom (*Mycologia*, vii, 134) has clarified the descriptions of *Penicillium* in the group *luteum-purpurogenum*. The Ascomycetes of Ohio are enumerated by Fink and Richards (Ohio Biol. Surv., Bull. v, 1), Davis (*Wis. Acad. of Sci. Trans.*, xvii, 846) reports a list of the parasitic fungi of Wisconsin, while Dodge (*ibid.*, 1027) gives an account of the Discomycetes of the same region.

The Myxomycetes of Wisconsin are listed by Dean (*ibid.*, 1221-1299), accounts of new and peculiar Zygomycetes are presented by Blakeslee (*Bot. Gaz.*, lviii, 353), and a critical study of saprophytic Fusaria found upon potatoes is given by Sherbakoff (Cornell Agr. Exp. Sta., Memoir VI, 88). Important papers on the cytology of the Phycomycetes are contributed by Edson (*Jour. Agr. Res.*, iv, 279-292), Keene (*Ann. Bot.*, xxviii, 455), and Kunkel (*Jour. Agr. Res.*, iv, 265).

PALEONTOLOGY

CHARLES R. EASTMAN[1]

Invertebrates.—In the invertebrate division of paleontologic science the most important contribution of the year is the *Bibliographic Index of American Ordovician and Silurian Fossils*, in two volumes, by Dr. Ray S. Bassler (Bull. 92, U. S. National Museum). Dr. C. D. Walcott has announced the discovery of Algonkian bacteria, and has continued his publications on Cambrian trilobites in the Smithsonian *Reports*. A *Revision of Paleozoic Stelleroidea*, by C. Schuchert, is a monographic study of these rare fossils (Bull. 88, U. S. National Museum). Another important monograph is W. B. Clark's revision of the Mesozoic and Cenozoic Echinodermata of the United States. The study of fossil insects of North America has been continued by T. D. A. Cockerell, and G. H. Girty has contributed four

[1] For notes on fossil reptiles and mammals the writer is indebted to Drs. W. K. Gregory and W. D. Matthew, of the American Museum of Natural History.

papers on the fossils of the Carboniferous rocks of the United States.

Fishes. — Owing to conditions abroad, the chief advance in vertebrate paleontology during the year has been made in this country. Nevertheless, several very important contributions by foreign authors are to be recorded. Among the latter may be mentioned Dr. A. S. Woodward's generalizations on the evolutionary history of the class of fishes contained in his anniversary address before the Geological Society of London (Feb. 19, 1915). Prof. F. Priem, of Paris, presents an excellent account of the Cretaceous and Eocene fishes of Egypt, and has also contributed two important papers on Upper Tertiary fish remains from southeastern France (*Bull. Soc. Géol. France*, xiv). Dr. Edward Hennig, of the Berlin Museum, reports the interesting discovery of otoliths in the Permian ganoid *Palæoniscus*. Some new species of Jurassic fishes from Solenhofen and Cerin, France, are described by C. R. Eastman in the *Memoirs* of the Carnegie Museum. In this country Dr. R. L. Moodie has investigated the fossilized brain and auditory organs of a small species of *Rhadinichthys*, first described by Eastman from the Waverly of Kentucky, and occurring also in the Pennsylvanian at Lawrence, Kans. Dr. W. K. Gregory reviews in the *Annals* of the New York Academy the early evolutionary history of the principal groups of fishes with especial reference to the skull and locomotor organs. An attempt is made by this author to trace the stages by which the paired fins of Devonian fringe-finned ganoids (*Crossopterygii*) were transformed into the fore and hind limbs of the earliest amphibians.

Amphibians and Reptiles.—Dr. R. L. Moodie has described a remarkable amphibian from the Pennsylvania of Ohio, which combines archaic amphibian and reptilian characters in the limbs (*Am. Jour. Sci.*, xxxix). More recently (*Am. Nat.*, Sept., 1915) the same author contrasts the amphibians of the coal measures with crossopterygian fishes, and shows that even at that remote epoch the two groups were structurally far removed from each other; so that their common ancestors, if such existed, must be sought in much earlier periods.

Dr. E. C. Case contributes an important memoir on the "Permo-Carboniferous Red Beds of North America" and their vertebrate fauna (Car. Inst. Wash., Publ. No. 207). He describes the geological structure and relations of these beds, the nature of former prevailing conditions, and discusses the life-habits and appearance of many of the strange amphibians and reptiles found there. Prof. S. W. Williston, in a paper on *Trimerorhachis* (*Jour. Geol.*, xxiii), argues that this extinct amphibian represents a secondary adaptation to aquatic habits, and that its ancestors were more terrestrial and therefore less fish-like in habits and structure.

Dr. R. Broom, of London, has issued a catalogue of South African fossil reptiles, and in his Croonian lecture "On the Origin of Mammals" (*Phil. Trans. Roy. Soc.*, ccvi B) discusses the anatomical evidence for the derivation of this class from the Therapsid group of reptiles. D. M. S. Watson, of University College, London, has investigated the cranial structure of *Bauria*, *Microgomphodon*, *Arctops* and other characteristic South African types. In another paper (*Proc. Zoöl. Soc. London*, Sept., 1914) the same author describes the anatomy of the *Deinocephalia*, one of the most curious of the South African groups. Some of these extinct creatures were of huge size, with massive limbs and an arched back, like a gigantic *Echidna*, but with swollen, short-beaked skull.

Dr. Watson has also described (*ibid.*, Dec., 1914) a peculiar Permian South African reptile, known as *Eunotosaurus africanus* Seeley, which apparently offers the long-sought clue to the origin of the Chelonia. In this connection mention should be made of a work by Prof. Hugo Fuchs, of Strassburg, on the structure and development of the skull of *Chelone imbricata*. The first part of this volume treats of many far-reaching morphological problems, such as the derivation of the lateral wings of the sphenoid bone and the origin of the mammalian auditory ossicles. The dinosaurs of North America have been

made the subject of important contributions by R. S. Lull, C. W. Gilmore, L. M. Lambe, Barnum Brown, W. D. Matthew, and W. J. Holland.

Mammals.—Progress in this branch of vertebrate paleontology during the year has been mainly in continuance of researches, presenting few salient points of interest. The most important contributions of the year on fossil mammals deal with the order Primates. Dr. Guy E. Pilgrim, in the *Records* of the Geological Survey of India, describes a number of new or little known anthropoids from the Miocene and Pliocene of India and discusses the affinities of the higher primates and the ancestry of man in the light of the new evidence. He regards the extinct genus *Sivapithecus* as very near to the direct ancestry of man, *Pithecanthropus* being approximately intermediate, while the Piltdown man (*Eoanthropus*) and Neanderthal man (*Homo neanderthalensis*) are relegated to a side branch derived from an earlier stage in the ancestral series than *Sivapithecus*. Pilgrim's conclusions in regard to other extinct and existing genera are not less unexpected. Among the living anthropoids the gibbon is considered nearest to the hominid stem. One species of the Miocene *Dryopithecus* is believed to be related to the gorilla, and the new genus *Palæosimia* to the orang.

Dr. W. K. Gregory (*Bull. Geol. Soc. Amer.*, Dec., 1914) summarizes his studies on the Lemuroid Primates and discusses the evolution and relationships of the Lemuroids of the Eocene of North America and Europe. Dr. W. D. Matthew and Walter Granger describe a series of new or little known primates and primate-like Insectivora from the North American Eocene and trace the history of these groups through the successive horizons of the Eocene. The above-mentioned papers add largely to the data for reconstructing the evolutionary history of the order Primates, including man, a line of investigation which is being actively pursued.

The results of recent studies upon the Piltdown man (*Eoanthropus*) are summarized in the British Museum "Guide to the Fossil Remains of Man." A still later (Nov. 24, 1915) and very important contribution is that by Dr. G. S. Miller in the *Smithsonian Miscellaneous Collections* (No. 2376), who presents strong evidence to show that the Piltdown jaw cannot belong to the same animal as the skull, and represents an extinct species of chimpanzee. (See also XXVI, *Anthropology and Ethnology.*)

Under the title "Climate and Evolution" Dr. W. D. Matthew (*Annals N. Y. Acad.*, xxiv) presents a theory accounting for the observed geographical distribution of animals in present and past ages. He begins by applying to the facts certain modern geological doctrines; such as the correlated alternations of elevation and of climate during geological time, the isostatic balance of continental and ocean masses, and the persistence of the great continental masses which never sank to abyssal depths, but often permitted the sea to make temporary incursions upon their surfaces. Partly by means of a remarkable series of maps, showing the present and past distribution of many races of mammals, the author adduces very weighty evidence for the view that these races originated in the northern continents and then spread southward into South America, Africa, southeastern Asia and Australia.

Prof. H. F. Osborn contributes an extended study (*Am. Nat.*, April, 1915) of certain features of the process of evolution. Basing his conclusions on a wide range of zoölogical, experimental and paleontological data, he develops the distinction between "rectigradations," or qualitatively new characters and "allometrons," or changes in proportion, degree or intensity. The same author (*Annals N. Y. Acad.*, July, 1915) summarizes the successive advances and retreats of the continental glaciers and the corresponding shiftings of the floras, faunas and human populations. The last topic is more fully treated in Professor Osborn's recently published work entitled *Men of the Old Stone Age*. Here the author gives a detailed description and analysis of the long succession of Paleolithic stages in Europe, with a series of new restorations of *Pithecanthropus*, of *Eoanthropus* and of the races of Neanderthal and Crô-Magnon.

XXVI. ANTHROPOLOGY, ETHNOLOGY, SOCIOLOGY, AND ECONOMICS

ANTHROPOLOGY AND ETHNOLOGY

GEORGE GRANT MACCURDY

Fossil Man in Spain.—The first human skull belonging to what is now known as the Neandertal type was found in Spain at Gibraltar, but not attracting at the time the attention it deserved, the Gibraltar skull has continued to be more or less eclipsed by later discoveries representing practically the same fossil race. A like fate befell a discovery made nearly 30 years ago in the province of Gerona, Spain, near the town of Bañolas, which is built on travertine beds left by a former great lake. Here, in April, 1887, Don Lorenzo Roura encountered in a quarry a human lower jaw embedded in the hard travertine at a depth of from four to five metres. Fortunately, Roura left the fragile jaw, almost complete, in its stone matrix and turned the block over to a Bañolas pharmacist, Don Pedro Alsius, who undertook the preparation of the specimen by the careful removal of the matrix from the bone. Although he published nothing concerning the specimen, Alsius recognized its archaic character. The first printed notice seems to have been that in *Anuari del Institut d'Estudis Catalans*, Barcelona, 1909, by Prof. Manual Cazurro. Another note by Prof. E. Harlé appeared in 1912 in the *Boletin del Instituto Geológico de España* (Madrid). In 1915 there appeared an exhaustive study entitled "La Mandibula Neandertaloide de Bañolas," by Profs. E. Hernandez-Pacheco and Hugo Obermaier.

The bone is of the same color as the matrix and highly fossilized. The right side is fairly well preserved. The left half of the jaw was broken in seven pieces when discovered. These have been successfully united. The left ascending ramus is not in so good a condition as the right. While the coronoid and condyloid processes are missing, the transverse diameter of the latter can be measured because of the tufa negative. Nearly the whole of the condyle lies inside the plane of the outer surface of the ascending ramus if extended, as is the case with the lower jaw of La Chapelle-aux-Saints. The neck of the condyle is short; the coronoid process low and blunt as seen in the nearly intact right ramus. The ascending branches are relatively low and broad. The body of the lower jaw is also low but robust. The chin is at least rudimentary if not wholly lacking. In some Neandertal examples the absence of chin is more pronounced and the angle of symphysis correspondingly greater.

The lower jaw of Bañolas belonged to a male, who had reached the age of about 40 years. Morphologically it falls within the Neandertal group, being the second discovery of this type in Spain. Unfortunately it was associated neither with other skeletal remains nor with artifacts. The travertine and the lower jaw itself are undoubtedly Pleistocene. If not so archaic as the Gibraltar skull, it might well be as old as the remains from La Ferrassie, which were associated with a typical Mousterian industry.

Fossil Man in South Africa.—In November, 1913, portions of a human skull were found in alluvial gravel at a depth of six feet on the farm of Piet Botha near Boskop, Transvaal. Later excavations by F. W. Fitzsimons and others brought to light parts of the skeleton and other fragments of the skull, including a por-

tion of the lower jaw. These bones are said to be highly fossilized. A detailed account of the Boskop discovery is now in preparation. On examination of photographs, Prof. Arthur Keith does not hesitate to say that the remains are of paleolithic age, although not of the Neandertal type. The remains are at present in the South African Museum.

Cave Art.—In July, 1914, Count Begouen and his three sons discovered a superb cavern in the province of Ariège, France. In their honor he has named it *La Caverne des Trois Frères*. On the floor of this cave were many bones, flint implements, and other objects bearing man's handiwork. Upon a bone fragment there was an excellent engraving of a fish. But the chief display of paleolithic art was on the walls, especially of the terminal gallery, where more than two hundred admirably engraved figures are to be seen. The following species have already been identified: mammoth, rhinoceros (the first found in the caverns of the Pyrenees), bear, lion, wolf, deer, reindeer, wild goat, horse, bison, chamois, eel, and bird. There are also anthropomorphic figures, including a curious female type drawn in black; it seems to be walking almost on all fours with head surmounted by the horn of a reindeer. It might represent a human figure wearing a mask, or perhaps a figure with mixed attributes; if the latter, then we have a new note in cave art, for until now that art has revealed no representations of mythologic creatures. Most of the mural art in the Cave of the Three Brothers is of a high order, a small panel with reindeer at rest having a special charm.

The Arctic Region and Canada.—Stefansson, head of the Canadian Arctic Expedition, who one year ago was thought to have been lost, has finally emerged from northern ice floes (see XXIII, *Exploration*). Simultaneously there came the announcement that he and his two companions had discovered new land north of Prince Patrick Island and were setting out to explore it. In his former expeditions Stefansson contributed largely to our knowledge of the Eskimo both past and present, and he may be depended upon to tell us whether the newly discovered land, at least 150 miles in extent, is now or has been inhabited by man.

Meanwhile steady progress has been made by the southern party of the Canadian Arctic Expedition, in charge of R. M. Anderson and with headquarters at Bernard Harbour, Dolphin and Union Strait. D. Jenness, ethnologist of the party, has been able to accomplish much among the hitherto little known groups of Eskimos in this region. He finds that these groups are not so definite as was formerly supposed; in fact, the groups are pretty thoroughly mixed. He has made good progress in linguistic work and vocabularies, having made 50 or more gramophone records of various Eskimo songs and spoken words, which he has had repeatedly reproduced before the natives, so that he could get the text letter-perfect, and translated for comparison with other Eskimo dialects. Mr. Jenness has collected also a large number of specimens of Eskimo tools, weapons, and other implements, clothing of all kinds, stone lamps and pots.

Dr. Edward Sapir, ethnologist attached to the Geological Survey of Canada, reports field work done by his staff among various Indian tribes. C. M. Barbeau has made an extensive study of the social organization of nine or ten Tsimshian tribes, formerly occupying the Lower Skeena River and the adjacent coast, but now gathered at Port Simpson, B. C. At the same time a collection was made of ethnographical objects illustrating the culture of these Indians. During the summer Mr. Barbeau collected folk-tales from the French-Canadians of Kamouraska County, Quebec. One of the main objects of this trip was to secure a definite basis of comparison with Indian folk-lore. By this and similar researches, the character and extent of European influence in aboriginal American folk-lore can be established with some definiteness.

F. W. Waugh, who has devoted a great deal of time in recent years to the material culture of the Iroquois, spent two months of the summer in additional field work among the Iro-

quois of Six Nations Reserve, Ontario. The greater part of the time was taken up with the collection of Iroquois myths, embracing some 130 stories, and such miscellaneous customs and beliefs as are generally included in the term folk-lore. F. H. S. Knowles, the physical anthropologist of the Division of Anthropology, continued the anthropometric work among the Iroquois. Tonawanda Reserve in New York State was first visited, while the rest of the season was spent in Six Nations Reserve, Ontario. A large number of measurements were secured. Work on Iroquois skeletal material was also undertaken at the museums in Toronto and Buffalo. It is intended ultimately to compare the results obtained from the ancient and modern data, with a view to defining the nature of the changes which the Iroquois physical type has undergone since contact with the whites.

J. A. Teit spent the summer in field work among the Athabaskan tribes of the Stikine River region. He visited the Kaska of the interior, and also continued work among the Tahltan previously begun. A large amount of general ethnographical information, including vocabularies and myths, was obtained, also museum specimens and photographs. At a prehistoric Iroquoian village site near Roebuck, Ont., W. J. Wintemberg uncovered and mapped traces of the palisade across a farm, which, being under crop, was not excavated by him in 1912 when he explored the greater part of the site. This season's exploration also resulted in securing 33 human skeletons and 11 boxes of objects made by the prehistoric people of the place. Several of the skeletons show conclusively that the people suffered from terrible diseases which caused growths upon the bones and the abnormal union of certain bones. Their teeth also gave them great trouble. Many fragments of pottery and of pipes made of pottery were found. Some of the latter are sculptured to represent the human face and are of artistic merit.

In Manitoba W. B. Nickerson explored an artificial burial mound on the most conspicuous headland overlooking the Assiniboine River. Among the finds were 162 marine shells ground across so as to form an eye to allow them to be fastened to a garment or strung as beads, and six cylindrical beads or pendants made of the columella of the conch. They indicate trade as far as the sea.

The work in British Columbia was carried on by Harlan I. Smith, who inspected sites and collections near Kamloops, Lytton and Yale. In three unobtainable private collections from the vicinity of Yale he saw and photographed some of the most remarkable specimens of sculpture ever unearthed in Canada. He also inspected a great shellheap, the refuse of a prehistoric village at Eburne; also a shellheap at the mouth of the north arm of Fraser River, two in Stanley Park, Vancouver, and a large one at Cresent, said to contain cairn burials. A prehistoric fort on top of a bluff overlooking the sea about a mile south of Crescent was inspected; it consists of a semicircular embankment some four feet high by eight feet wide, with exterior ditch four feet deep and twelve feet wide. A reconnaissance was made up the Skeena valley into the Bulkley as far as Hubert. Four extensive shellheaps marking as many ancient villages, parts of them shown to be at least several hundred years old by the large tree stump on top of the top layers, were found near Prince Rupert.

Eastern States.—Under the direction of Warren K. Moorehead, representing the Archeological Department of Phillips Academy, the work in Maine was continued. Shellheaps and sites along the Maine coast in the neighborhood of Castine and the shores of Penobscot Bay were excavated, studied and mapped. Exploration was continued on the Piscataquis River. Great quantities of iron ore were discovered in the neighborhood of the Katahdin Iron Works, and it is not improbable that from this source was obtained much of the so-called "red paint" that so markedly characterizes the primitive culture discovered near the coast, differing in extent and type of culture from the ordinary village site and shellheap. Later, near Warren, Me., two undis-

turbed sites of the so-called "red-paint" culture were discovered and excavated. The result in specimens was exceedingly encouraging.

Alanson Skinner, for the American Museum of Natural History, has been engaged in local archeological work, making a trip down the Delaware and another in central New York for the purpose of investigating the stratification of cultures existing in this region. An exploration on behalf of the University of Pennsylvania Museum, carried on by George L. Harrison, Jr., in New Jersey during the summer of 1915, resulted in an important discovery of ancient ceremonial deposits and three different culture layers, two different culture layers below the remains of the Lenape Indians. Geo. G. Heye has given to the National Museum a large and valuable collection of skeletal remains of the Lenape. Dr. A. Hrdlicka has completed a study of this series, comparing it with eastern crania in general. The report, which has already been submitted for publication, extends to 253 eastern crania, ranging from Canada to Virginia, and gives results of much consequence.

Ohio.—The Ohio Archeological and Historical Society, under the curatorship of W. C. Mills, has been highly successful in gathering a great collection of remains of the so-called mound builders, now suitably housed in a splendid new building on the university campus at Columbus. During the summer Mr. Mills excavated the Tremper Mound (formerly known as the Elephant Mound because of its shape) on the farm of Senator W. D. Tremper, five miles north of Portsmouth, O. Like others of the same general type, the Tremper Mound was a communal burying place. It is 250 ft. long by 50 ft. wide, and shows plainly that extensions were made from time to time; it was surrounded by an earthwork from three to four feet high. The articles found in this mound by Mr. Mills and his staff largely exceed in number and interest those of the Squier and Davis collections now in the Blackmore Museum at Salisbury, England. Effigy platform pipes predominate. Of the 200 pipes discovered, the bowls of many are exquisitely carved to represent some bird or animal. Nearly all the pipes are of southern Ohio fireclay, a rock capable of taking a beautiful polish, and similar in texture to the famous pipestone of Minnesota known as catlinite. A few of the pipes are of limestone.

One of the finest of the pipes represents a hawk with a bird in its talons; another is a blue heron with a fish in its beak. There are half-a-dozen examples of the otter holding a fish in its mouth. Perhaps the most highly prized of these effigies is unique; it represents a dog with tail curved over its back and in the attitude of baying at the moon. It is the position of the tail that enables the archeologist to be certain that a dog and not a wolf is meant by the figure. Among the rare specimens also is a raccoon, its paw down in a crawfish hole, and an opossum in a like posture. Other forms of animal life portrayed in sculpture include the bear, mountain lion, squirrel, wolf, eagle, crane, quail, duck, toad, and turtle.

In addition to the pipes, many other interesting objects were found: crescents and ear ornaments of copper, boat-shaped objects also of copper, breast plates of copper and their exact counterpart in slate, gorgets, great quantities of bear, wolf, and mountain-lion jaws, cut so as to be worn as ornaments, and imitation bear teeth also made of bone. The cloth taken from the mound was made from wild hemp, and from bast fiber, which is merely the inner bark of the linden tree.

Missouri.—Dr. Charles Peabody, director of the Department of Archeology at Phillips Academy, Andover, has excavated the so-called "Ash Caves" near Cassville, Mo. The deposit of cave dust was large, and contained great quantities of specimens and chips of flint of a fair quality. Bone implements were rare, and no human skeletons were found. Animal bones were very abundant, and in good preservation. It is hoped that a continued exploration of these Ozark caves may lead to a settlement of the question whether their inhabi-

tants were or were not Indians of like character with those of the surrounding districts, and whether or not the caves were the resort of summer hunting parties in prehistoric times and nothing else.

Georgia.—In coöperation with the Bureau of American Ethnology of the Smithsonian Institution, the Museum of the American Indian (Heye Foundation), of New York, commenced early in July the excavation of a large earthwork known as the Nacoochee Mound, near the Chattahoochee River, in White County, Ga. This mound rises about 17 ft. above the little valley in which it is situated; its summit varied in diameter from 67 ft. to 82 ft., and the circumference of its base was 410 ft. The tumulus had all the appearances of a domiciliary mound, but excavation showed that although it unquestionably had been used for residence purposes, interments had been made in it from time to time, especially within a depth of four feet from the summit and a comparatively short distance inward from the slopes.

The 68 skeletons so far discovered, all of which were in a poor state of preservation, were found usually with the skull directed eastward, and most of them were without burial accompaniments. In a few instances, however, smoking pipes, conch shells, shell ornaments, chipped stone knives, celts, a pottery vessel, discoidal stones, and the like were found in association. The pottery, found in sherds in great numbers throughout the excavation, especially in the refuse on the slopes and at the base of the mound, bears incised and impressed decoration of many varieties. In the body of the mound no painted pottery whatever was seen, but in a stone box-grave at the base of the earthwork there was found, in association with a skeleton, a well modeled effigy vase of painted ware, a large conch and a few pearl beads. Practically at the same base level and nearby, was another grave, covered with bark and rush matting, beneath which were a very thin copper ornament and a copper axe with the wooden handle intact. These objects found at the base of the mound, about 19 ft. below the summit level, are so unlike those in the upper portion as to suggest an earlier prehistoric culture.

That the mound was occupied within the historic period is attested by the finding of objects of European origin in the upper and more recent portion, and in the refuse of the slope and the base. The Cherokee claim the site as that of one of their former settlements, but the name Nacoochee is not of Cherokee origin. There is reason to believe that the site was inhabited by the Cherokee as late as the first decades of the 19th century. From the evidence gleaned from the excavations it appears that this site was originally inhabited by Indians unrelated to the Cherokee, and that the Cherokee subsequently occupied and gradually reared at least most of the mound, as is shown by the stratification of the earth and refuse deposits. An immense fire-pit near the center and top of the mound was one of its features, and numerous small fire-pits were found in other parts apparently without order.

Another feature of the mound is the large number of smoking-pipes (chiefly of clay, a few of stone) found in the refuse, and therefore in large part fragmentary. These pipes show great variety in form, and many of them have effigy bowls on which their makers were wont to display the best of their æsthetic taste and ability.

Other Southern States.—G. H. Pepper, for the Museum of the American Indian, has explored mounds in North Carolina. One of these, two miles from Canton, was about 65 ft. in diameter and 13 ft. high. It belongs to the stratified type; one stone grave was found near its base. Mr. Pepper also explored a part of southern Maryland.

The Tennessee River.—Clarence B. Moore of the Philadelphia Academy of Natural Sciences has just completed by means of his river boat a reconnaissance of the Tennessee River, going twice carefully over the entire stream. A full and illustrated account of what he has been able to accomplish will be published shortly in the *Journal* of the Academy.

The Southwest.—The Southwest continues to receive the special at-

tention of the American Museum of Natural History. N. C. Nelson spent the greater part of the year in further work upon the Galisteo Pueblo area in New Mexico. At the ancient pueblo of San Cristobal he discovered a deposit which contained four distinct types of pottery, the stratification of the deposit leaving no doubt as to the relative ages of the four types. The work has brought out very clearly and positively the chronological relations he had previously sketched. In addition he has been able to define the probable limits of the so-called glazed pottery area in northern New Mexico and Arizona.

Prof. A. L. Kroeber, in his expedition to Zuni made a thorough investigation of relationship systems and marriage systems and their relation to clan organization, giving us the first complete and clear account of the social organization of this pueblo. In addition, he gathered data from the many ancient village sites at Zuni by means of which he has made a chronological classification of these ruins. This marks a distinct advance in the archeology of this region, which, taken together with Mr. Nelson's work a little further north, gives us at once a chronological classification of a considerable portion of the pueblo area. Dr. Robert H. Lowie spent the summer among the little-known Shoshonean tribes in western and southern Nevada. This work has shown more clearly than heretofore suspected the presence of many southwestern traits among these otherwise typical Shoshonean people.

During the summer the Department of Archeology of Phillips Academy sent out an expedition in charge of Dr. A. V. Kidder to explore the ruined pueblos of Pecos, New Mexico. Large quantities of pottery rich in variety, numerous flint implements of great beauty, and human skeletal remains in abundance were found by Dr. Kidder, who employed part of his appropriation in repairing the ancient Spanish Mission Church at Pecos.

Dr. Walter Hough has finished a report on the Hopi collections in the United States National Museum; the results of this detailed study will soon be published. Neil M. Judd, for the Bureau of American Ethnology, has completed an archeological reconnaissance of western Utah, the results of which will soon appear in a publication of the Bureau.

A new chair of American archeology has been founded at the University of Arizona, Tucson. The first incumbent of the chair is Prof. Byron Cummings, formerly of the University of Utah.

Mexico and Central America.—In spite of the unsettled conditions in Mexico, the International School of American Archeology and Ethnology, under the direction of Dr. A. M. Tozzer, was able to accomplish much during the year ending in 1914. Several fields of research were covered in part. Dr. Max Wagner gathered linguistic material in order to ascertain the present status of the Spanish language, literature and folklore in Mexico. He found that Spanish tales, riddles and songs were better preserved among the Indians than among those who speak only Spanish. Dr. Wagner had the good fortune to find in Tlacotalpam, state of Vera Cruz, a book of great linguistic and literary importance, dating probably from the 16th century.

Wm. H. Mechling continued his work upon the Nahuatl dialect spoken in Tuxtepec, Vera Cruz. He also studied the dialects spoken in Santiago Aculo and San Andres Aculo in the canton of Cosomalahuapan, Jaltipan, on the Isthmus of Tehuantepec, and San Andres and Santiago Tuxtla. The dialects of this part of the state of Vera Cruz seem to fall into four groups, those of the Tuxtlas being one. The limits of the Chinantec language were determined, it being found to extend into the northern parts of the districts of Ixtlan, Villa Alta, and Choapan, Oaxaca. The Chinantec area is divided into two districts, one the *tierra caliente* and the other the high arid plateau, a division which seems to be ethnic and linguistic as well as physical. Mr. Mechling also made an archeological reconnaissance of the territory covered by his linguistic studies.

Clarence S. Hay continued the stratigraphical work near Mexico City, which has been the most important archeological problem of the school. Extensive work was carried on also in San Miguel Amantla. Here the archaic type was found *in situ* from 3 to 3.5 m. below the surface. Collections of the archaic type were obtained at Naucalpan, the hill of Los Remedios, Contreras, Texcoco, Zacatengo, and the hills of Guadalupe, Peñon de los Baños, San Angel, and Coyoacan. The presence of similar types far to the east and south would seem to indicate that this archaic type represents an early stage of culture which spread over the whole of middle America and from which the various cultures now known as pre-Nahua, Zapotec, and Maya have sprung.

At two sites in the village of San Miguel Amantla, waterworn sherds and a few figurines of the archaic type were found. Most of the time, however, was spent in excavating a *cerrito* a short distance west of the village of Santiago Ahuitzotla. The site was found to cover an area of about 1,000 sq. m., and to contain three distinct levels. The main edifice is at the second level, and was completely uncovered. The excavations have been taken over by the Government of Mexico and the site declared a national monument.

Honduras.—During the summer Professor Saville and Randolph M. Saville, representing the Museum of the American Indian, were in Honduras making a preliminary survey of the northeastern part of the republic. This was done to prepare for extended explorations to be made in the region lying along the coast of the Caribbean Sea from the mouth of the Rio Ulua eastward and southward to Nicaragua in the vast territory known as Mosquitia. In the mountain region southwest of San Pedro Sula several ruins were discovered, and an examination was made of the conditions along the Ulua River, previously reported on by Gordon. An important archeological collection was brought together illustrating the complex features of this region, objects of various well known and far distant cultures being found by the explorers in the restricted area of the Ulua valley.

The Amazon.—The Amazon Expedition of the University of Pennsylvania Museum under Dr. Farabee has completed its work in the southern Guianas, where a number of new tribes were discovered. Dr. Farabee has also studied the tribes living on the Ucuyali River at the headwaters of the Amazon, and made excavations on the island of Marajo, unearthing several thousand pieces of ancient pottery. In June he entered the Tapajos to penetrate the unexplored country between that and the Madeira, and has not been heard from since.

Island of Margarita, Venezuela.—An expedition sent in 1915 to the island of Margarita, off the north coast of Venezuela, by the Museum of the American Indian (Heye Foundation), under Theodoor de Booy, has completed an archeological survey of the island, with the effective coöperation of the Venezuelan Government. In all about 900 pre-Columbian specimens were collected. One of these specimens consists of a "foot-jar" not unlike those from Oaxaca, Mexico. Shellheaps were found and excavations made in these, the latter resulting in a disappointingly small number of sherds. It would appear that the culture of the island of Margarita was related more to the mainland than to the neighboring Antillean islands; the stone axes, pottery specimens, etc., being, for the greater part, different from those of the lower West Indian islands. Considerable ethnological and geographical data were collected from this practically unknown island.

Island of Trinidad.—The same expedition, on completing the Margarita work, proceeded to the neighboring island of Trinidad and explored the east coast. This work principally centered around Cape Mayaro, and large and important excavations were made in the shellheaps on the St. Bernard estate of P. Urich. These shellheaps were spread over an extent of some six acres, with a depth varying from two to seven feet. In all some three thousand sherds and other spe-

cimens were collected, but complete vessels were rare.

Peru.—The archeological work of the Peruvian Expedition of 1915, under the auspices of Yale University and the National Geographic Society, was seriously interfered with by the Historical Institute of Cuzco, Peru, which brought suit in the courts against the Expedition, accusing it of carrying on destructive excavations and smuggling large quantities of Inca gold out of Peru through Bolivia. All excavating was stopped by order of the Government, but not before the large ruins of Patallacta at Qquente, of which an elaborate plan has been prepared, and several minor ruins in the Pampacahuana and Vilcabamba valleys had been carefully excavated and thorough search made for all possible indications of the former civilization. The fact that this excavation was carried on with great care and that it appeared to result in nothing but a multiplication of bones, potsherds, and a few bronzes, only added fuel to the suspicion of the archeologists in Cuzco, who could not believe that anyone would work so long and so thoroughly unless huge quantities of gold were being found. After considerable delay the Government appointed two members of the Historical Institute as inspectors to oversee the work of excavation, which was ordered to proceed. But as these gentlemen never came near the Expedition after they were appointed as inspectors, and declined to come into the region where it was desired to excavate, it was impossible to do anything but abandon the work.

Before archeological reconnaissance work was stopped by the Government, Prof. Hiram Bingham succeeded in locating a dozen groups of ruins hitherto unknown, several of them being on the lines of ancient highways which connected Machu Pichu with the surrounding region. The work progressed far enough to demonstrate the supreme importance of the ruins at Machu Pichu in their relation to the country north of Cuzco. Mapping the ruins has been allowed to proceed, and a large number of photographs have been taken. Mr. Hasbrouck has been engaged in completing a large map of Ollantaytambo, the importance of which from the point of view of archeology has long been known. The valley of the Cosireni, hitherto unvisited by any persons but rubber gatherers, was explored; this afforded further opportunity for a study of the Machiganga Indians. Other activities of the expedition were studies of the cultivated plants and fauna of the region, ethnological measurements of Indians, and further studies of the Quichua language.

New Institutions and Exhibits.—The extensive collection relating to American Archeology and Ethnology gathered by George G. Heye of New York City and his staff has been incorporated as the "Museum of the American Indian, Heye Foundation." An institution for ethnological research, modeled largely after the Bureau of American Ethnology, has recently been founded in Leipzig. The new institution is endowed in part by the Government and in part by private means; it is affiliated with the Ethnographic Museum of Leipzig, and is furthermore in close connection with the Ethnological Seminary of the University.

A chief as well as a permanent feature of the Panama-California Exposition at San Diego is a comprehensive exhibit relating to the natural history of man, called in this instance the "Science of Man." A special appropriation was made at an early date and the work placed in the hands of Dr. A. Hrdlicka of the U. S. National Museum. In order to make the exhibit as complete as possible, remote regions of the earth were visited by Dr. Hrdlicka and his assistants. The splendid exhibit assembled by Dr. Hrdlicka is but a part of the larger exhibit in charge of Dr. E. L. Hewett, covering archeology, anthropology and art. Under "Culture History," based on the native American race, Dr. Hewett installed exhibits, in some instances life-sized groups, illustrating primitive industries, and also the ceramic art, methods of linguistic study, house life, ceremonies, etc. Ancient American art, especially of Central America and the Pueblo region, is

still another feature of the general exhibit, which like the Field Museum in Chicago, may in time grow to large proportions as a permanent archeological museum.

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SOCIOLOGY

Herbert N. Shenton

Theory.—*Societal Evolution* has caused no little comment among the sociologists. It is the work of Albert G. Keller, who has succeeded W. G. Sumner at Yale and who naturally is an exponent of Professor Sumner's conceptions of society. In this study the author has endeavored to apply the Darwinian biological terminology to the processes of societal evolution, on the ground that "if the salient and determinative processes of organic evolution are repeated in their essence in the life of human society, then we can say that there is such a thing as societal evolution and that we have some definite idea of what it is like." As to the quality of the argument, F. H. Giddings has said: "As a scientific work, it is thoroughly good throughout, sober, well buttressed, and keenly intelligent at every point." The thesis is well discussed in reviews by A. A. Tenney (*Science,* N. S., xlii, Oct. 8, 1915) and by L. L. Bernard (*Amer Jour. Sociology,* xxi, Sept., 1915).

The Social Problem is the title of a small volume in which C. A. Ellwood aims "to furnish a scientific basis for the progressive social movement." Having stated the problem as being "how to avoid the decay and disintegration of civilization itself," he presents successively historical, physical and biological, economic and spiritual, and ideal elements in the modern social problem. In the final chapter he contends that the practical solution "depends upon the finding and training of social leaders." In a review of the book in the *American Journal of Sociology,* A. W. Small says: "More clear and stimulating thinking is seldom condensed into so few pages."

A very real contribution to American sociological thought and theory has been made by J. F. Hecker's presentation of *Russian Sociology.* The value of the work is enhanced in that the author has not presented the work of those who only re-interpret the theories of others but has included all those who have contributed to the Russian schools of sociology and thereby to the general field.

Synthetic Works.—One of the needs with which sociologists have been con-

fronted for years has been a textbook which was adapted to the requirements of collegiate classes. In the early part of the year F. W. Blackmar and J. L. Gillin published an *Outlines of Sociology* which not only meets the requirements of teachers but also provides a comprehensive survey of the entire field of American and European sociology for the general reader. The work will probably become a classic in the standardization of sociology for pedagogical purposes. The first four parts of the book are given to general sociology. The last three parts treat of social pathology, methods of social investigation, and the history of sociology.

Later in the year E. C. Hayes completed a volume long in preparation, a veritable slow integration, and refined by actual use in manuscript form for a number of years in university and collegiate classrooms. In selection of data, proportion and method of treatment Professor Hayes has followed the practice of the best economists in preparing texts for similar purposes in their field. After two introductory chapters, the subject matter is treated under four heads, the causes which affect the life of society, the nature and analysis of the life of society, social evolution, and social control. The practical problems and concrete social conditions are presented in connection with the theory to which they are related, thus preserving the integrity of the theoretical discussion.

Social Policy.—The contributions at the annual meeting of the American Sociological Society were concentrated on one particular problem of social policy. Freedom *versus* reasonable restriction of communication in its various forms was discussed and debated. E. A. Ross in his presidential address on "Free Communication and the Struggle for Right" sounded the keynote of the sessions. He held a brief for a very liberal attitude toward the wage-earners whose initial weapons in their struggle with the powerful "are the unhindered disclosure of their wrongs and free discussions of plans for concerted action." Freedom of assemblage in relation to public security was discussed by J. G. Brooks. The reasonable restriction of assemblage was presented by Arthur Woods on the basis of practical experience. Reasonable restriction upon freedom of speech was defended by J. B. Reynolds. With Henry Schofield defending the freedom of the press in the United States, C. H. Grasty defended the reasonable restriction of the same. The freedom of the teacher in this country was the theme of U. G. Weatherly, with Henry Pritchett making a defence of reasonable restriction upon the scholars' freedom. In the extended discussions which followed the major contributions, there were in each case those who definitely favored policies of social control and others who invariably inclined to *laissez faire*.

Socialism as the Sociological Ideal, by F. J. Melvin, presents a defence of the social control through conscious organization, based on social science with which he would replace the doctrine of *laissez faire*, which system of chance he describes as a system of waste. F. H. Giddings, in his *Western Hemisphere in the World of To-morrow*, presents a number of the fundamental problems of sociology in such concrete form as to reveal their vital relation to the determining of the policies for the America of to-morrow. A. A. Tenney, in an article on "Theories of Organization and the Problems of International Peace," not only has discussed such policies of unification and organization as will lead to more satisfactory international relations, but has also set forth in excellent form the elements, forces and relations which must be considered in determining policies in relation to all types of social organization.

The Inductive Method.—Although not published primarily for that particular purpose, W. C. Brinton's *Graphic Methods for Presenting Facts* is a compendium of valuable information to the student of sociology who endeavors to work primarily by the inductive method. Following, as it does, the various works on statistics published during the last few years, it is richly suggestive of meth-

ods of presenting accurately observed sociological data in forms in which it is most significant and suggestive and in which, at the same time, it invites the more fundamental criticisms. The book will undoubtedly be effective in extending the field of inductive work in social science throughout the United States.

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ECONOMICS

WESLEY C. MITCHELL

Systematic Works.—Prof. Richard T. Ely has long been regarded as the leader of the "historical school" of economists in America. But his intellectual affiliations have been closest with that group of historical economists who are least hostile to economic theory. Knies above all, then Wagner and Conrad, have been his masters. Hence he has not scrupled in past years to publish theoretical textbooks of the orthodox type. But in discussing *Property and Contract in their Relations to the Distribution of Wealth* (2 vols., Macmillans), he has a more congenial field and attains a more characteristic development of his viewpoint. He lays stress upon the importance of legal concepts as developed by the courts; but what concerns him most is the social philosophy of property and contract, and the changes which these institutions are undergoing at present under the influence of a keener "social self-consciousness."

That a disciple of the Austrian school can be not less practical than a disciple of the historical school is shown by Dr. Watkins's *Welfare as an Economic Quantity* (Houghton, Mifflin). The book ends with the conclusions, "that the means of bare existence are of no utility or of contingent utility only; that moderate incomes are good in themselves and good for society, and that great incomes, especially great inherited incomes, mean principally a waste of utilities." The path by which Dr. Watkins reaches these conclusions is an exceedingly careful analysis of the concept of utility. He distinguishes several different species of utility (among them a newly recognized kind, "transputed utility"); but he holds that "all utilities are commensurable with each other, because all satisfactions are thus commensurable."

The discussion of "The Concept of Value" between Profs. J. M. Clark and B. M. Anderson, Jr. (*Quart. Jour. of Economics,* Aug., 1915), is significant of the effort (involving not a little strain) to break down the barrier between economic theory and practical thinking on matters of public policy. Both writers seem to agree that the most promising way to attack

the barrier is to "develop a concept of social value and valuation independent of market valuations and capable of scientific application to concrete cases." Prof. C. H. Cooley, who for some years has been working in this direction, adds this year a study of "The Progress of Pecuniary Valuation" (*Quar. Jour. of Economics*, Nov., 1915). Certain of the changes in the treatment of value made by Prof. F. A. Fetter in the new edition of his *Economic Principles* (Century Co.) show how the "American psychological school" can accommodate its theories to this departure.

Economic Psychology.—Prof. Thorstein Veblen's *Imperial Germany and the Industrial Revolution* (Macmillans) is an analysis of the difference between the cultural situation in Germany and England. Racially he holds the two populations to be substantially alike; they differ culturally because one people has been subjected to the discipline of modern industrial methods longer than the other. These industrial methods favor the growth of a democratic state, of class animosities, and of wasteful and lazy habits among the well-to-do. The English developed the machine technology gradually and long enough since to permit these cultural consequences to work themselves out. The Germans borrowed the same methods ready made and so recently that they have not yet had time to subvert the old cultural order, with its coercive state, its unquestioning acquiescence in dynastic leadership, and its frugal and industrious habits. Hence the Germans benefit by the full efficiency of machine production, as yet without the abatements which require generations for their development. Veblen has made a similar analysis of the cultural status of Japan (*Jour. of Race Development*, July). The best discussion of Veblen's work in this field comes from Graham Wallas (*Quar. Jour. of Economics*, Nov., 1915).

Prof. F. W. Taussig's *Inventors and Money-makers* (Macmillans) is another constructive study in the borderland between economics and psychology. It deals primarily with the instinct of contrivance (nearly related to Veblen's "instinct of workmanship"; see *A. Y. B.*, 1914, p. 673), the psychology of money-making, and the possible future developments of "altruism, the instinct of devotion," in business life.

Business Cycles.—Much attention has naturally been given to the extraordinary business conditions brought about by the European War. Among the most noteworthy American contributions have been Prof. O. M. W. Sprague's careful study of "The Crisis of 1914 in the United States" (*Am. Economic Rev.*, Sept., 1915); Dr. H. P. Willis's analysis of "American Finance and the European War" (*Jour. of Political Economy*, Feb., 1915); and J. J. Arnold's account of "The American Gold Fund of 1914" (*ibid.*, July, 1915). Prof. E. J. Clapp's book, *Economic Aspects of the War* (Yale University Press) deals primarily with the economic rights of Americans as neutrals and the danger that threatens them. Less of current and more of theoretical interest attaches to Prof. Minnie T. England's exposition of "Promotion as the Cause of Crises" (*Quart. Jour. of Economics*, Aug., 1915), and to Professor M. T. Copeland's study of "Statistical Indices of Business Conditions" (*ibid.*). In this connection it may be noticed that the U. S. Bureau of Labor Statistics has adopted a new form for its important index numbers of prices (see its bulletins).

Theory of Rate Making.—Seven different papers by as many writers on special phases of rate regulation in the *Journal of Political Economy* (Jan., Feb., and June), two other articles in the *American Economic Review* (March and June), and a continuation of last year's controversy between Prof. A. A. Young and J. S. Davis (*Quart. Jour. of Economics*, Feb.) show how lively an interest economists are taking in this problem. Prof. W. Z. Ripley's elaborate analysis has been completed by the appearance of his second volume (*Railroads: Finance and Organization*, Longmans).

XXVII. PSYCHOLOGY AND PHILOSOPHY

PSYCHOLOGY

HERBERT SIDNEY LANGFELD

Fundamental Principles.—That R. S. Woodworth in his presidential address before the American Psychological Society in December, 1914, chose as his subject "A Revision of Imageless Thought" (*Psych. Rev.*, Jan., 1915) is evidence of the importance and interest of the inquiry into the fundamental nature of the higher thought processes. The question which has been put to experimental test on both sides of the Atlantic is whether thought is nothing but sensations and images, or whether there is an element *sui generis*, that is, imageless thought. Woodworth adopts the latter alternative and finds these imageless elements in the remote relations of a given perception, which are the memories of past experience. E. B. Titchener ("Sensation and System," *Am. Jour. of Psych.*, April, 1915), in answering Rahn's criticism of his system, takes occasion to emphasize the necessity of subordinating system to data, speculation to experimentation. Courses upon behavioristic psychology are increasing in the large universities. An important article upon the behavior method is that by E. B. Holt, entitled "Response and Cognition" (*Jour. of Philos., Psych., and Scientific Methods*, July 8 and 22, 1915). The author tries to show that the essential point in animal behavior is the response, which he defines as "any process of release which is a function of factors external to the mechanism released." He then goes on to argue that this same is also the cognitive relation, and is (instead of "mind") the basis of psychology (see also *Philosophy, infra*).

Experimental Human Psychology.—There seems to be an indication in America of a revival of the old interest in the various sensations, although the thought processes have received attention and investigations in memory have been especially numerous during the year. The Nela Research Laboratory, National Lamp Works of the General Electric Co., continues to offer excellent opportunity for careful research in the field of vision. A recent publication from that laboratory is Knight Dunlap's paper, "A New Measure of Visual Discrimination" (*Psych. Rev.*, Jan., 1915). By means of an Iceland-spar crystal a double image of a line or rectangle is produced and the relation of the two images is varied by rotating the crystal. This affords a precise and convenient method of testing visual acuity. Another useful instrument is that described by L. T. Troland in a paper entitled "The Theory and Practice of the Artificial Pupil" (*ibid.*, May, 1915). In the department of sensations, C. E. Ferree and G. Rand have added another to their numerous articles upon vision, entitled, "A Preliminary Study of the Deficiencies of the Method of Flicker for the Photometry of Lights of Different Colors" (*ibid.*, March, 1915). They advise a careful study of the factors of flicker before it is used as a method for standardizing laboratories. E. G. Boring has made extensive investigations of the sensations of several heretofore unexplored internal organs. His two papers are entitled "Sensations of the Alimentary Canal" (*Am. Jour. of Psych.*, Jan., 1915), and "Processes Referred to the Alimentary and Urinary Tracts" (*Psych. Rev.*, July, 1915). Two investigations of time perception should be mentioned. Bertha von der Nienburg found in her experiments ("The Apparent Rate of Light Succession as Compared with Sound Succession," *ibid.*, Jan., 1915)

that the generally accepted statement that of equal times marked off by light and sound the intervals in the succession of lights seem shorter than those of sound does not always hold. Knight Dunlap found in his investigation ("The Shortest Perceptible Time Interval Between Two Flashes of Light," *ibid.*, May, 1915) that the temporal threshold is lower for the light-adapted eye. An investigation in auditory space perception has been completed by L. R. Geissler ("Sound Localization under Determined Expectation," *Am. Jour. of Psych.*, April, 1915). Expectation influences the localization of sounds. More sounds of unknown localization are projected in front than behind, due to expectation arising from the predominating influence of vision upon our life. J. E. Downey and J. E. Anderson have investigated motor control ("Automatic Writing," *ibid.*, April, 1915). Although they found a simultaneity of mental processes when writing while speaking, and writing while adding, yet introspection showed that there was not entire absence of conscious control of the pencil. An investigation which may be important for the measurement of attention is that of E. G. Martin, B. D. Paul, and E. S. Welles, entitled, "A Comparison of Reflex Threshold with Sensory Threshold" (*ibid.*, July, 1915). The wink reaction was found to vary less than the sensory threshold reaction, the latter depending upon the higher nerve centers and probably involving attention. L. J. Martin has continued her work upon imagery. In a paper entitled "Ghosts and the Projection of Visual Imagery" (*ibid.*, April, 1915) she says that whether we see ghosts or not depends upon whether we normally project our visual images into space. She also believes that by the analysis of spontaneous imagery we can investigate the subconscious ("An Experimental Contribution to the Investigation of the Subconscious," *Psych. Rev.*, July, 1915). Of the many investigations upon memory, three should be noted here. R. S. Woodworth ("The Influence on Retention of Conditions Favoring Quickness of Learning," *Jour. of Philos., Psych. and Scientific Methods*, April 29, 1915) found that a long list of words acts as a stimulus to greater effort. A short list is learned by rote without much attention to the meaning, while a long list favors meaningful apprehension, which aids retention. H. F. Adams in his investigation ("A Note on the Effect of Rhythm on Memory," *Psych. Rev.*, July, 1915) found that rhythms affected men and women differently, and irregularity of presentation was more disturbing to women than to men. E. L. Woods writes ("An Experimental Analysis of the Process of Recognizing," *Am. Jour. of Psych.*, July, 1915) that recognition is not a moment of consciousness but a progressive consciousness. There must be a perceptible interval between perception and reaction in order to have recognition. An investigation upon the thought processes is that of T. V. Moore ("The Temporal Relation of Meaning and Imagery," *Psych. Rev.*, May, 1915). Meaning was found to be present before the accompanying images. He therefore concludes that imagery, although it may be context, cannot be meaning, but that the latter is a unique process. In the subject of æsthetics interesting work continues to come from the Psychological Laboratory of Vassar College. Two titles are "The Influence of Fatigue on Affective Sensitiveness to Colors" and "The Source of Affective Reactions to Articulate Sounds" (*Am. Jour. of Psych.*, April, 1915). J. E. Downey has published an experiment in æsthetics entitled "Emotional Poetry and the Preference Judgment" (*Psych. Rev.*, July, 1915). She found that group reactions to emotional poetry are slightly more subjective than to imaginal poetry. R. C. Givler has made an extensive study of the relation between sound and æsthetic appreciation in poetry ("The Psycho-Physiological Effect of the Elements of Speech in Relation to Poetry," *Psych. Monogr.*, xix, No. 2, 1915).

Abnormal Psychology.—There is a growing demand for psychological investigation in the field of criminology, and the courts of the large cities are beginning to employ psychologists to examine the prisoners. An article by V. V. Anderson of the Boston courts

has appeared under the title, "The Laboratory in the Study and Treatment of Crime" (*Jour. of Criminal Law and Criminology*, March, 1915). C. S. Rossy has also a report of work on delinquents in Bulletin No. 13 of the Massachusetts State Board of Insanity. W. Healy of the Chicago courts has published a book entitled *The Individual Delinquent—A Text-Book of Diagnosis and Prognosis for All Concerned in Understanding Offenders* (Little, Brown). Much attention is being given to the development of adequate tests. Instead of the former method of applying the Binet tests, R. M. Yerkes and his coworkers, acting upon the suggestion of the late E. B. Huey, propose giving credit according to the merit of the responses of the subject. A description of their method and results is to be found in their book, *A Point Scale for Measuring Mental Ability* (Warwick & York). T. H. Haines has made a comparison of the point scale and the Binet tests ("Point Scale Ratings of Delinquent Boys and Girls," *Psych. Rev.*, March, 1915). Although there is an increasing application of the Freudian method of psycho-analysis to mental diseases, there is much criticism of the extreme form of the movement. R. Bellamy by a *reductio ad absurdum* argument shows how very possible it is for a seemingly plausible interpretation of a dream to be false ("An Act of Everyday Life Treated as a Pretended Dream and Interpreted by Psychoanalysis," *Jour. of Abnormal Psych.*, April-May, 1915). G. Stanley Hall, in "Anger as a Primary Emotion and the Application of Freudian Mechanisms to Its Phenomena" (*ibid.*, June-July, 1915), points out that this movement opens up a much larger field than that of sex.

Animal Psychology.—It is generally agreed that the greatest need at present is adequate provision for the study of the monkey and the anthropoid ape. R. M. Yerkes, having made a trip to the Pacific Coast in order to find a suitable climate in which to keep and breed the ape, concludes that this can be done anywhere south of Santa Barbara. While there he made a study of the ideational behavior of the anthropoid ape based upon the multiple choice and supplementary methods. He discovered ample evidence of such behavior. A description of the multiple choice method as devised by him may be found in the work done by him and his pupil, C. A. Coburn ("A Study of the Behavior of the Pig *Sus Scrofa* by the Multiple Choice Method," *Jour. of Animal Behavior*, May-June, 1915, and "A Study of the Behavior of the Crow *Corvus Americanus Aud.* by the Multiple Choice Method," *ibid.*, March-April, 1915).

One of the most important publications of the year is that of J. B. Watson and K. S. Lashley entitled "Homing and Related Activities of Birds" (*Papers Dept. Marine Biology, Carnegie Inst.*, vii, 1915).

Productive studies in the color vision of birds and animals are being continued at Johns Hopkins University. The present tendency in animal psychology is to devise and refine methods. This will be seen in the numerous problems with the maze, especially the series of researches by S. B. Vincent appearing in the *Journal of Animal Behavior*. W. T. Shephard has put dogs and cats to the same tests as monkeys and has found that their adaptive intelligence is much below that of the monkeys ("Tests on Adaptive Intelligence in Dogs and Cats, as Compared with Adaptive Intelligence in *Rhesus* Monkeys," *Am. Jour. of Psych.*, April, 1915).

Applied Psychology.—A glance at the *Journal of Educational Psychology* will show that the principal attention is devoted to methods of grading work and measuring efficiency, especially in spelling and writing. Psychologists are particularly interested in devising tests. In W. A. McCall's paper, "Preliminary Report of an Experiment to Determine the Effect of Air Conditions upon the Accuracy of Judgments of Intellectual Products" (*Jour. of Philos., Psych., and Scientific Methods*, April 29, 1915) is a description of some of the work carried on by the New York State Commission on Ventilation. It was shown that although hot, humid conditions affected the comfort of the subjects, the accuracy of judgment did not seem impaired. The principles of

psychology essential for business are to be found in Hugo Münsterberg's *Business Psychology* (La Salle Extension University). Among papers on the psychology of advertising we may cite H. F. Adams, "The Adequacy of the Laboratory Test in Advertising" (Psych. Rev., Sept., 1915).

PHILOSOPHY

Ralph Barton Perry

General Philosophy.—The war has affected in many ways the course of events in the philosophical world. The fifth International Congress of Philosophy was to have been held in London in September, 1915. The programme had been completed and the attendance of many scholars from America and from Continental Europe was assured. The Congress was abandoned with a feeling of deep regret that old ties must be broken. Happily the war has led to the forming of new associations as well as the breaking of old. Prof. Maurice De Wulf of the University of Louvain, in exile since the violation of Belgium, is spending four months at Harvard, where he is lecturing on scholastic philosophy. He is one of the most distinguished of living scholars in a field which has hitherto been seriously neglected in American colleges not under Roman Catholic control.

The prominence recently given to German *Kultur* and ideals has led to fresh interpretations of German philosophy. In his *German Philosophy and Politics* (Holt) Prof. John Dewey traces the connection between the present militaristic and nationalistic tendencies in German politics and the absolutism and *a priori* character of the traditional German philosophy. He pleads for an American policy that shall be based on an experimental philosophy. J. H. Muirhead, on the other hand, in his *German Philosophy in Relation to the War* (Murray), insists that the ideas at present dominant in Germany are not idealistic but materialistic, and are due not to the influence but to a falsification of the great masters Kant and Hegel. The widespread tendency to trace the teachings of Bernhardi and Treitschke to the influence of Nietzsche is combated by W. M. Salter in a scholarly article entitled "Nietzsche's Superman" (*Jour. of Philos.*, Aug. 5, 1915). Attention is called to Nietzsche's contempt for war, and his emphasis upon spiritual as opposed to merely physical qualities. In his *Evolution and the War* (Dutton), P. Chalmers Mitchell attacks the Darwinian theory as applied to national life, and insists that man introduces wholly new factors into life that make the conceptions of struggle and survival insufficient.

The work of Bertrand Russell continues to receive much attention in English-speaking countries. On June 2, Mr. Russell was awarded the Nicholas Murray Butler Gold Medal for "the most distinguished contribution to philosophy or education anywhere in the world during the last five years." The committee making the award were "of the opinion that the type of logical studies represented in the work of the Hon. Bertrand Russell has been the distinctively determining philosophical interest during the period under consideration." The interest in his strictly logical studies (see *infra*) is exceeded only by that taken in his theory of knowledge as represented by his work entitled *Our Knowledge of the External World* (*A. Y. B.*, 1914, p. 677). To this interesting union of the technique of mathematical logic with an empirical analysis of the data of immediate sense-experience, Mr. Russell has made important contributions during the year, in three articles contributed to the *Monist*. The first, on "Sensation and Imagination" (Jan.), seeks to find the distinction between these two forms of experience in a difference of time-relation, the object of sense being simultaneous with the act of sensing, the object of imagination having no time-relation to the subject. The second article, "On the Experience of Time" (April), distinguishes and defines simultaneity, succession, immediate memory, time-relations on the object side, and time-relations between subject and object. In "The Ultimate Constituents of Matter" (July), Mr. Russell reduces

matter to classes of particular sense-data.

No writer has been more variously and laboriously refuted than Mr. Russell. Like Kant, he is furnishing an occupation for his opponents. In an article entitled "Mr. Bertrand Russell on our Knowledge of the External World" (*Mind*, April, 1915), H. A. Prichard attacks his view of the privacy or relativity of physical and spacial data. This criticism represents the belief that Mr. Russell is not realistic enough. Criticisms from an idealistic standpoint are to be found in Th. de Laguna's "The Logical-Analytic Method in Philosophy" (*Jour. of Philos.*, Aug. 19, 1915). Professor Dewey, instrumentalist and pragmatist, argues that the whole question concerning the existence of the external world is such "that the terms cannot be so stated as to generate a problem without assuming what is professedly brought into question" ("The Existence of the World as a Problem," *Philos. Rev.*, July, 1915). Many of these criticisms have been answered in Mr. Russell's behalf by O. Strachey ("Mr. Russell and Some Recent Criticisms of His Views," *Mind*, Jan., 1915). Mr. Russell is supported by G. E. Moore and criticized by G. F. Stout in a symposium on "The Status of Sense-data," printed in the *Proceedings of the Aristotelian Society* for 1913-1914.

Contemporary interest in psychological method, due mainly to the rise of what is called "behaviorism," is reflected in the philosophical literature of the past year. E. B. Holt has written two interesting articles entitled "Response and Cognition" (*Jour. of Philos.*, July 8 and 22, 1915) in which he has offered a strict definition of behavior, and has at the same time amplified and clarified the theory of consciousness as specific organic response which he expounded last year in his *Concept of Consciousness* (*A. Y. B.*, 1914, pp. 674, 677). A defense of behaviorism by a biologist is offered by C. J. Herrick, in his "Introspection as a Biological Method" (*Jour. of Philos.*, Sept. 30, 1915). A. H. Jones ("The Method of Psychology," *ibid.*, Aug. 19, 1915) offers a compromise between the functional and the structural methods. Other articles in a similar vein are G. A. Tawney's "What is Behavior?" (*ibid.*, Jan. 21, 1915), and R. H. Gault's "On the Meaning of Social Psychology" (*Monist*, April, 1915). (See also *Psychology, supra.*)

Coming finally to more isolated pieces of work we have to mention first W. H. Sheldon's spirited attack upon the contemporary epistemological emphasis. In an article entitled "The Vice of Modern Philosophy" (*Jour. of Philos.*, Jan. 7, 1915), he pleads for a return to metaphysics and a study of the existent world; a programme directly opposed to the main currents of present-day philosophy, which attempts rather to analyze experience and categories in such general terms as would hold of any world. Professor Dewey discusses the same problem in his article on "The Subject-matter of Metaphysical Inquiry" (*ibid.*, June 24, 1915). J. E. McTaggart's article on "The Meaning of Causality" (*Mind*, July, 1915) is an interesting study of an important fundamental concept. Two books of very different authorship and method deal with the limits of science. Agnes McCaskill has translated *The Idealistic Reaction against Science*, written by Professor Aliotta of Padua (Macmillans). Although this book contains good summaries of recent tendencies in science, its greatest value for an English reader will lie in its scholarly exposition of contemporary philosophers, such as Bradley, Bergson, Royce, Rickert, Windelband, Meinong and others. The author's own view is a spiritualistic realism, with the substantial reality of the conscious individual as its central conception. L. T. More's *The Limitations of Science* (Holt), on the other hand, is written by a physicist. In spite of philosophical crudities it offers a strong defense of the positivistic method in science, and contains accounts of recent scientific tendencies that are clear and searching. Further books deserving of mention are *Theism and Humanism*, by A. J. Balfour, being the Gifford Lectures for 1914; Macintosh's *The Problem of Knowledge* (Macmillans), an uniquely complete survey of present-day opinions on epistemol-

ogy; J. M. Baldwin's *The Genetic Theory of Reality* (Putnams); and H. M. Kallen's *William James and Henri Bergson* (Univ. of Chicago Press), the elaboration of an essay published in *Mind* in 1914 (*A. Y. B.*, 1914, p. 679).

Ethics.—There are two causes for the special interest in ethics during the year. In the first place, the fourteenth annual meeting of the American Philosophical Association, held jointly with the Western Philosophical Association in Chicago on Dec. 28-30, 1914, was devoted mainly to ethical subjects. The address of the President (J. H. Tufts) on "Ethics of States" (*Philos. Rev.*, March, 1915) criticized the doctrine of national self-assertion and survival by struggle, and appealed for the moralizing of politics. A joint session was held also with the Political Science Association, and papers were read on such topics as Democracy and Justice. Many of these papers have since been published, as, to cite only one, H. A. Overstreet's paper, "Philosophy and the New Justice" (*Inter. Jour. of Ethics*, April, 1915).

The second cause of special interest in ethics is of course the war. Bertrand Russell ("The Ethics of War," *ibid.*, Jan., 1915, and "Non-resistance," *ibid.*, Oct., 1915) defends non-resistance as a means of passive national defense. *The International Crisis in Its Ethical and Psychological Aspects* (Oxford Univ. Press), by E. M. Sidgwick, Gilbert Murray, A. C. Bradley, L. P. Jacks, G. F. Stout and B. Bosanquet, is inspired by the war, and contains interesting discussions of such topics as hatred, the ethics of the state, etc. In the *Hibbert Journal* for January, 1915, Bergson writes on "Life and Matter at War," "matter," of course, signifying Germany. Two further articles deserve mention in this connection, N. Kemp Smith's "The Moral Sanction of Force," and J. A. R. Mariott's "The War and the Theory of the State," both in the *Hibbert Journal* for July, 1915.

The theory of value continues to receive much attention. The most important contribution to this subject made in America during the year is a pair of articles from the pen of Professor Dewey, entitled "The Logic of Judgments of Practice" (*Jour. of Philos.*, Sept. 16 and 30, 1915). These articles contain a summary restatement of the whole instrumentalist position in philosophy. Another article worthy of mention here is W. K. Wright's "The Evolution of Values from Instincts" (*Philos. Rev.*, March, 1915).

Logic.—Interest continues in symbolic or mathematical logic, with special reference to the *Principia Mathematica* of Russell and Whitehead. In "The Postulates of Deductive Logic" (*Jour. of Philos.*, April 29, 1915), Th. de Laguna asserts that the principle of deduction is itself presupposed in all logic, and therefore cannot be defined by logical methods. An article entitled "Numbers, Variables and Mr. Russell's Philosophy," by R. P. Richardson and E. H. Landis (*Monist*, July, 1915), contains a severe indictment, from the mathematician's standpoint, of the whole project of the *Principia*. Kindred articles are E. Guthrie's "Russell's Theory of Types" (*Jour. of Philos.*, July 8, 1915), and H. B. Alexander's "The Definition of Number" (*Monist*, July, 1915). An interesting conflict of logical opinion appears in a symposium on "The Import of Propositions," by E. E. C. Jones, B. Bosanquet, and F. C. S. Schiller (*Proc. Aristotelian Society*, 1914-15). H. Sturt's recent book, *The Principles of Understanding* (Cambridge Univ. Press), is a discussion of the foundations of logic from the standpoint of the author's "personal idealism."

Aesthetics.—The only important English work on this subject during the year is B. Bosanquet's *Lectures on Aesthetics* (Macmillans), but even this book owes its importance more to its authorship than to its contents.

History of Philosophy.—In this field N. Kemp Smith has written an interesting article on "Kant's Relation to Hume and Leibnitz" (*Philos. Rev.*, May, 1915), and Clement C. J. Webb has accomplished the feat of giving an account of the entire history of philosophy within the narrow limits of a volume of the Home University Library (Holt).

XXVIII. THE MEDICAL SCIENCES

ANATOMY

G. Carl Huber

Cytology.—Lewis, Margaret Reed and W. H. Lewis present (*Am. Jour. Anat.*, xvii) the results of an extended study of the mitochondria and other protoplasmic structures in tissue cultures, a preliminary report on which was noted in the last issue of the Year Book (p. 648). The mitochondria were present in all the cells of these cultures, scattered throughout the protoplasm as slightly refractive bodies of variable shape. They are inconstant in shape, size and number in cells of the same type and in different states of physiologic activity. They appear to arise in the cytoplasm and to be used up during cellular activity and are probably connected with the metabolic activity of the cell. Ringoen (*Anat. Rec.*, ix) holds that for the eosinophil leucocytes of the bone marrow there is a definite endogenous differentiation of the granules; basophilic in the myelocyte stage, they pass through a series of changes, becoming larger and more acidophilic, until they are transformed into true eosinophilic granules. The same author (*ibid.*) finds that the bone marrow of the rabbit contains true mast myelocytes with basophilic granules which show no relation to the lymphocytes of the circulation and whose granules are not a product of the mucoid degeneration of the spongioplasm. Cupp (*ibid.*) working with special fixatives and very thin sections, shows that the erythrocyte has normally a fine-threaded reticular framework which in nucleated forms is continued into the nucleus. This reticulum is condensed to form a peripheral membrane and a similar but thinner membrane about the nucleus. Martin (*ibid.*), in a study of neutral stains as applied to granules of the pancreatic islet cells, finds that by using compounds formed by the union of ethyl violet with orange G and with azo fuchsine a more brilliant and permanent picture can be obtained than by using neutral gentian, a mixture of gentian violet and orange G, which is generally used to demonstrate these granules.

Difficulty has been experienced by workers engaged in the study of tissue cultures to identify the derivatives of the several embryonic tissues. Congdon (*ibid.*) records experiments made on tissue cultures in which sections of such cultures were made to supplement the study of whole preparations. (See also XXV, *Zoölogy.*)

Growth and Development.—Huber (*Memoirs Wistar Inst.*, No. 5) has contributed an extensive study on the development of the albino rat, covering the stages from the end of the first to the end of the ninth day of gestation. The process of segmentation, of blastodermic vesicle formation, of ectoderm, entoderm and mesoderm formation, and the entypy of the germ layers is considered in successive developmental stages. In part two of this study the pathologic ova encountered are considered and figured. Weber (*Anat. Rec.*, ix) has obtained by means of experimental studies on fundulus eggs observations tending to justify the assumption that defective or monstrous development may be due to parental metabolic toxemia (see also XXV, Zoölogy). Baldwin (*ibid.*) has produced spina bifida in a large number of cases by subjecting a restricted portion of the yolk-hemisphere of the frog's egg to the action of in-

tense ultra-violet light for a few seconds. He believes that the resulting dead area in the yolk retards the growth backwards of the dorsal blastoporic lip. The neural anlage develops unabated, however, and because of the impossibility of fusing at the proper time, it differentiates into two neural tubes or cords. Jackson (*Am. Jour. Anat.*, xviii) details a long series of experiments on the effect of acute and chronic inanition on the varicus organs of the adult albino rat, finding that the trunk decreases in relative weight while the head and fore limbs lose relatively less than the body as a whole, and the hind limbs maintain their relative body weight. The same author (*Jour. Exp. Zoöl.*, xix) records observations on the weight of various parts, systems and organs of young albino rats held at constant body weight by underfeeding for various periods, finding that the relative weight of head, trunk and extremities remains practically unchanged during the experiment. The relative weight of the integument system is decreased while that of the skeletal system is increased. The relative weight of the muscular, visceral and nervous system is practically unchanged. Hatai (*Anat. Rec.*, ix) reports on a study of the growth of albino rats fed on a lipoid-free diet, finding that such diet diminished the normal rate of growth of the body. The testes, and to a less extent the ovaries, show a deficiency of growth and the nervous system shows a weight reduction of about two per cent. The same author (*ibid.*) has studied the effect of exercise on the growth of the organs of the albino rat, finding that in the exercised rat the internal organs, kidneys, heart and liver, show an average excess of weight of about 20 per cent., the brain of four per cent., the ovaries of 84 per cent. and the testes of 12 per cent., the spleen showing about 20 per cent. of weight deficiency. King (*ibid.*) in a study of the weight of the albino rat at birth finds that the average weight of the new born male rat is 4.54 gm., and of the female rat 4.27 gm., with wide variations dependent on a number of factors—age, body weight and physical condition of the mother, size of litter and position in litter series, and length of gestation period. In a further study (*ibid.*) on the growth and variability in weight of the albino rat, King finds that the growth graphs for each sex are practically the same when environmental conditions are uniform, so that within a given colony individuals at any stated age have a like weight. As a rule the male rat is heavier than the female rat at birth and at subsequent ages, but at about 60 days of postnatal life the weight of the female rat approaches that of the male. It was found that environmental and nutritive conditions have a marked influence on the body weight of the rat. King and Stotsenberg (*ibid.*) record observations on the normal sex ratio and litter size of the albino rat. The average litter size is 7.0. The sex ratio in over 1,000 litters examined was 107.5 males to 100 females. There was observed a slight seasonal variation in the sex ratio but no pronounced seasonal variation in litter size. Stotsenberg (*ibid.*) reports on the growth of the fetus of the albino rat from the thirteenth to the twenty-second day of gestation, and the data obtained are correlated with corresponding though less extensive observations on the human fetus. (See also XXV, *Zoölogy.*)

Internal Organs, Structure and Development.—Laurens (*Anat. Rec.*, ix) reports on a study of the connecting systems in the reptilian heart. Working with lizards and tortoises, he distinguished three connecting systems: (1) the dorsal ligament or sino-ventricular bundle, which contains no muscle and is not concerned with the coördination of the heart beat; (2) the sino-auricular connection; and (3) the auriclar-ventricular funnel, by means of which latter the auricular and ventricular musculature is continuous. Kunkel (*ibid.*) reports on a study of the paraphysis and pineal region of the garter snake, finding a parietal organ which appears somewhat later than the epiphysis anlage. The two structures are separated by a rather wide portion of the diencephalic roof, and between them the superior commissure later develops. Corner (*Carnegie*

Inst. Contr. to Embryol. No. 5) presents a comprehensive study of the histogenesis of the corpus luteum of the pig, reaching the conclusion that the lutein cells are derived mainly from the cells of the stratum granulosum of the ovarian follicle. Lutein cells and accessory lutein cells of types I and II are described. For the lutein cells phases of differentiation are considered. In the earlier stages of cytomorphosis these cells present an exoplasmic zone with canalized protoplasm, and fat droplets and a granular endoplasmic portion. In later stages the granular endoplasm develops at the expense of the exoplasmic zone, the fat droplets disappearing. Toward the end of pregnancy with beginning retrogression large fat drops are to be observed in the protoplasm. An internal secretion is postulated. The corpus luteum of pregnancy is distinguished from that of ovulation by the more regular and uniform morphology of the former. Badertscher (*Am. Jour. Anat.*, xviii) in two communications considers the morphogenesis and histogenesis of the thymus of the pig, and finds it to have an ectodermal and entodermal origin, the superficial thymus being derived from the cervical vesicle, while the greater part of the remaining portion is derived from the third pharyngeal pouch. The lymphocytes of the thymus, found to be of mesenchymal origin, wander into the epithelial anlage from the surrounding mesenchyma as large lymphocytes. The reticulum and thymic corpuscles are of epithelial origin. The free red blood cells and eosinophil cells, found in both interlobular septa and thymic lobes, are derived from lymphocytes *in situ*. Eggerth (*Anat. Rec.*, ix) in a study of the anlage and early developmental stages of Cowper's and Bartholin's glands in human embryos, based on reconstructions after the Born method, finds that these glands have their anlage in solid epithelial buds arising from the middle of three longitudinal, symmetrically placed folds of the epithelium of the urogenital sinus, in embryos having a crown-breech length of about three centimetres. Scammon (*Am. Jour. Anat.*, xviii) presents results of an extended study on the histogenesis of the selachian liver, finding that in the forms studied the hepatic tubules are at first represented by longitudinal ridges which constrict transversely to form tubule anlagen which grow outward and produce tubules of the third or fourth order. Tubule anastomosis then takes place. The mesenchyma of the liver is derived by proliferation of the mesothelium in definite areas. Sinusoids arise by intercrescence of the hepatic tubules with the omphalomesenteric veins. Baumgartner (*Jour. Morph.*, xxvi), in a study of the morpho- and histogenesis of the hypophysis of *Squalis acanthias*, traces the several parts of this structure through successive stages of development. Anterior, superior and inferior lobes are recognized, and it was found that the cells of the two former lobes are acidophilic. Addison and Appleton (*ibid.*) consider the development, growth and structure of the incisor teeth of the albino rat, finding that anlagen appear in the 14-day rat fetus. The early tooth germ is essentially symmetrical. By the eighteenth day the enamel organ is differentially developed on the labial side. In the rat fetus of 21 days, enamel and dentin formation is beginning. The incisor teeth of the rat erupt the tenth day after birth with an enamel shell on the labial side and dentin on the lingual side of each tooth. The incisors grow throughout the life of the rat at the average rate, per week, of about 2.2 mm. for the upper and 2.8 mm. for the lower incisors, the occlusal surfaces continuing to be worn away by use. H. K. Davis (*Am. Jour. Anat.*, xviii) has made a careful study by means of dissections of injected material of the thoracic duct in man and explains the variations found as to the mode of termination in the neck veins on the right and left side and variations in course on the assumption that the embryonic thoracic duct is bilaterally symmetrical, with numerous cross anastomoses, and that the duct as found in the adult is the result of persistence of certain portions of the embryonic thoracic duct system with atrophy and disappearance of other parts. Bean (*ibid.*) presents a criti-

cal study of certain characteristics of the external ear of American whites, Indians and Negroes, Alaskan Esquimos and Filipinos. According to form the external ears studied may be grouped under three main heads, designated by the author as hypo-onto-morph, meso-onto-morph and hyper-onto-morph. Morphologic characteristics, various measurements and indices are considered in making such classification.

Blood and Lymph-Vascular System. —Stockard (*Am. Jour. Anat.*, xviii), recognizing the difficulty of ascertaining the origin and histogenesis of blood cells and endothelium in normal embryos with circulation, owing to intermixture of the blood cells in the blood stream, has studied these cells in fundulus eggs treated with a weak solution of alcohol, the resulting embryos in many cases never establishing a blood circulation. He was thus able to study the complete development of blood cells in the particular region in which they originate. It was found that the red blood cells arise and differentiate in two localities, the one within the posterior body region and the other as blood islands on the yolk sac. The endothelium of the blood vessels was found to arise *in loco* from mesenchymal cells. The source of red and white blood corpuscles in fundulus embryos was found to be distinct, the two types not having monophyletic origin except as they arise from mesenchymal cells. Sabin (*Carnegie Inst. Contr. to Embryol.* No. 7) has contributed an excellent study of the development of the veins in pig embryos and has shown that the inferior vena cava, from the heart downward, consists of a segment derived from the omphalomesenteric vein and certain liver sinusoids; below the liver the right mesial cardinal and below the kidney from the prevertebral plexus. It is further shown that the azygos veins are derived from the prevertebral plexus connecting with the duct of Cuvier, the postcardinal taking no part in their development. Streeter (*Am. Jour. Anat.*, xviii) has given the result of a re-investigation of the venous sinuses of the dura mater in the human embryo. The veins of the head furnish excellent example of the continuous adjustment of drainage channels subsequent to alteration in form and development of the area drained. The stage of primary head vein, the continuation of the anterior cardinal, which drains the capillaries of the head, is followed by a stage of separation of the veins of the head into two and finally three separate layers of which the middle comprises the dural veins, which adjust to meet environmental changes in the region of the middle and internal ear and the growth changes in the form of the brain. Bremer (*ibid.*) has studied the development of the renal artery in certain mammals with a view of determining the factors which account for the anomalies of this vessel. These anomalies depend on vessels present in the embryo before the aorta and its larger branches develop mesodermal coats. Certain ones are due to persistence of the early renal blood supply, during successive positions assumed by the kidney during development, others to mechanical selection of various parts of a periaortic capillary plexus, giving an opportunity for a change of position of the main aortic renal branches. Reagan (*Anat. Rec.*, ix) by separating the projecting head from the remaining embryonic body in chick blastoderms before the head is vascularized, found that when such head fragments were examined after 30 to 48 hours of incubation they possessed blood vessels in varying degrees of development. These must have developed *in situ*. The observations are used as an argument against the specificity of the angioblast. McClure (*ibid.*) in a study of the lymphatic systems of the trout embryo notes the finding of an independent subocular lymph sac, evident in living embryos, which serves as lymph reservoir for the reception of lymph which enters in a centripetal direction from the intercellular spaces. These subocular lymph sacs are independent only temporarily, until they establish communication with the lateral pharyngeal lymphatics, through which a connection with the venous circulation is established. These large subocular lymph sacs furnish examples of the discontinuous anlagen of the lympha-

tic system. The same writer (*ibid.*) argues against the specificity of the endothelium or the ingrowth or angioblast theory of His. It is his contention that in the development of the vascular and lymphatic systems there exists a local origin of endothelium from mesenchymal cells and a growth of endothelium after it has once been differentiated. Kampmeier (*Am. Jour. Anat.*, xviii) has studied the origin of the lymphatics in bufo, finding that the lymphatic endothelium is derived from that of the blood vascular channels. The connection between the lymphatic anlage and the vascular endothelium, however, is lost early, a lymphatic vessel thus developing from several discrete fundaments. This writer is thus at variance with the two prevailing schools of investigators in this field, those who maintain that the lymph ducts are developed *in situ* from mesenchymal cells and discontinuously, and those who contend for venous origin of the lymph vessel endothelium with a continuous centrifugal growth. R. West (*ibid.*) details an investigation of the origin and early development of the posterior lymph hearts in the chick, with a view to adding to the knowledge of lymphatic development, and reaches the conclusion that the posterior lymph hearts arise by a confluence of independent mesenchymal spaces, that these are lined primarily by mesenchymal cells which later become flattened to form endothelial cells, and that there is formed secondarily a connection with the veins, which connection is lost in later developmental stages.

Nervous System and Organs of Special Sense.—Hardesty (*Am. Jour. Anat.*, xviii) presents an extensive study of the tectorial membrane, in which he reaches the conclusion that its shape and structure is especially adapted to serve as the chief vibratory structure of the auditory apparatus. It is thickest at the apical end, tapering gradually and equally to its basal end. It is pointed out that the tectorial membrane is far more adapted for vibratory activities than is the basilar membrane, generally regarded as exercising sympathetic vibrations in response to sound waves. J. B. Johnston (*Jour. Comp. Neur.*, xxv) has described as found in a fetal human brain (145 mm. crown-rump length) an olfactory path which passes rather directly from the anterior commissure region to the tectal region at the level of the isthmus. The origin and termination of these symmetrically placed paths could not be determined fully. The same author (*ibid.*) presents a study of the cell masses of the forebrain of the turtle with a view to obtaining a better understanding of the evolution of the mammalian cerebral hemispheres, since the turtle brain occupies an intermediate position between the brain of fishes and mammals, affording thus a standpoint for recognizing homologous structure in the three groups. The purpose of this study was to define the morphologic relations of the chief cell masses in the brain of the turtle in order that the data gained might be used in further studies in fish, reptilian and mammalian brains. Herrick and Coghill (*ibid.*, xxv) have studied the development of the reflex mechanism in amblystoma and find that the first movement that can be evoked by light tactile stimulation of the skin is the simple avoiding reaction of turning the head end of the body away from the side stimulated. In slightly older stages this is followed by a true swimming reflex. The structure of the nervous system was studied for these stages and structure and function correlated and it was found that the earliest reflexes require a rather complex neurone chain.

Tilney (*ibid.*) has contributed a study in craniate homology considering especially the morphology and morphogenesis of the diencephalic floor. The floor of the second brain vesicle was studied in adult brains in representatives of the several vertebrate classes and the morphogenesis traced in developmental stages of the types selected. It is concluded that the region of the optic chiasm of the mammalian brain has definite homologues in lower vertebrate brains. Other regions of the diencephalic floor are homologized. Jefferson (*ibid.*) has studied critically the causes of furrow formation of the

brain surface, finding that this phenomenon depends on cortical specialization and growth or evolutionary antagonism, this growth antagonism existing between the brain wall which is constantly acquiring new areas and its fibro-osseous capsule, the skull. In evolution the new furrows appearing do so at the edges of areas possessing cyto-architectural differences. In the primate brain, furrow formation depends on constant factors through the order. Poynter and Keegan (*ibid.*) give a detailed description of a number of Negro brains, especial attention being given to convolution and fissuration. The conclusion is reached that there is an essential difference between the Negro and the Caucasian brain, but the Negro type lies within the limits of variation of the Caucasian type. The Negro brain is characterized by the inferiority of development of the frontal area. Willard (*Bull. Mus. Comp. Zoöl.*, No. 261) presents a careful study of the cranial nerves of *Anolis carolinensis*, a small lizard, thus giving for the first time a description of the cranial nerves of an adult amniote form based on serial sections. This form possesses no spinal accessory, otherwise is typical. The cranial components were worked out and it was found that the somatic sensory nerves pass *via* the Vth; the somatic motor *via* III, IV, VI and XII; the viscero-sensory *via* the VII, IX and X; the viscero-motor *via* the V, VII, IX and X. The taste buds receive their innervation through the chorda tympani and palatine nerves. Addison (*ibid.*) reports on the olfactory area of the brain of the common dolphin, which form is characterized by the entire absence of the olfactory bulbs and tracts. The study of this brain shows that the loss of these external olfactory structures is accompanied by a great atrophy of the hippocampal formation. There is a slight persistence of the paraolfactory cortex, and the nuclei amygdalae and nuclei habenulae, though present, are reduced. Hooker (*ibid.*) has shown that regenerative process in the spinal cord of frog embryos, severed after complete closure of the neural tube, will establish anatomical and physiological continuity under favorable circumstances. The elements entering into the regenerative process are derived from the original cord; motor fibres developing from the motor cells of each segment, sensory fibres from the cut surface of the posterior stump. There is developed a reticulum of fibres derived from the cells of the central canal into which wander neuroblasts derived from each stump. Sutton (*Am. Jour. Anat.*, xviii) details successful differential staining of the developing nerve fibres of neuromuscular spindles, using the methylene blue method. He was able to stain nerve fibrils in the eye muscle mass of 12-mm. pig embryos as delicate unattached fibrils, which form a simple neurofibril net on becoming attached to the myoblasts. With development of the muscle fibres this net becomes more and more complex and an intermediate substance, identified as a receptor substance, is recognized. Strong (*Jour. Comp. Neur.*, xxv) reports a study of a human brain (child, aged about 3½ years) with almost complete absence of the left hemisphere of the cerebellum. Many of the structures, fibre paths and cell masses, were markedly defective; however, the findings correspond with the accepted views of cerebellar connections, the case throwing no light on the direction of the paths involved. Ranson (*ibid.*) presents a study of the vagus nerve of the turtle, finding that in this form the nerve consists of a cervical and a thoraco-abdominal branch; the former consists mainly of medullated, the latter of non-medullated fibres. Reverly (*Anat. Rec.*, ix) reports on using the secondary degeneration method followed by Marchi staining in study of the pyramidal tract of the guinea pig, finding that the decussation begins about one millimetre below the level of the calamus and ends at the junction of medulla and cord. At about the middle of the decussation a very small bundle of fibres passes dorsally on the same side to end in the grey matter. All other nerve fibres cross to the opposite side and either end in the grey matter or enter the dorsal column and form a bundle in the ventral part of the funiculus cuneatus.

PHYSIOLOGY AND PHARMACOLOGY

S. J. Meltzer

Blood and Circulatory Apparatus.—Continuing the experimental work in support of his theory that the presence of an antithrombin in the circulating blood is the cause of the fluidity of the blood (*A. Y. B.*, 1914, p. 687), Howell (*J. P.*,[1] xxxv, 307) succeeded in precipitating by means of aceton a practically pure prothrombin. By the addition of this precipitate and calcium to pure fibrinogen, a fibrin clot is readily formed. This shows that for the production of thrombin the presence of an activator (thrombokinase, etc.) is not necessary. Working with this pure prothrombin Howell found among others that the activating property of calcium salts is exhibited to a much less extent by strontium and very feebly by magnesium salts.—In his investigation of lymph, Howell (*ibid.*, 483) found that it clots slower than blood, that the milky lymph of recently fed animals clot slower than clear lymph, that the prolongation of the clotting time is due to the absence of the platelets in the lymph which leads to a deficiency in thromboplastic substance, and that lymph contains antithrombin. The slow clotting of lymph is sustained by the slow disintegration of the lymphocytes.—Howell (*ibid.*, xxxvi, 1) studied the effect of the temperature upon clotting. It is accelerated by increase of temperature. For artificial plasma (solution of fibrinogen plus thrombin) the optimum lies at 35° C. while at 40° C. there is a tendency toward a retardation which is never very marked. When thrombin is acting upon dried calcium-free blood plasma there is a very marked retardation of the clotting at 40° C.; in fact when the amount of thrombin used is not too large, there may be even a permanent suspension of coagulation. This is due to an augmenting effect of that degree of temperature upon the action of the antithrombin. The body temperature may thus be a factor in the maintenance of the fluidity of the circulating blood in living animals. Howell established further that the weakening or destroying effect of high temperature (60°-100° C.) upon thrombin is greatly accelerated by the presence of small amounts of sodium chloride.—K. R. Drinker and C. K. Drinker (*ibid.*, 304) investigated the effect of rapid progressive hemorrhage upon the factors of clotting. Hemorrhage causes in the majority of animals a progressive acceleration of the clotting; in an occasional animal there is no change in the coagulation time, no matter how severe the hemorrhage is. When there is a shortening of the coagulation time, the antithrombin content of the blood becomes diminished. The prothrombin content is only slightly affected. Fibrinogen, however, decreases, as hemorrhage progresses.—Mendenhall (*ibid.*, xxxviii, 33) studied the influence of some anesthetics upon the coagulation time. It is little altered by chloroform or chloral hydrate, unless the normal time is short; then it is prolonged. Coagulation is hastened by ether anesthesia, which is explained by the stimulating effect upon adrenals.—Leech extract prevents or retards clotting of blood. During the phenomenon, known as anaphylactic shock, the blood of the animal fails to clot. Lee and Vincent (*M. R.*, xxxii, 345) found that in both instances the blood platelets are greatly reduced.—Schneider and Havens (*J. P.*, xxxvi, 239) studied the changes in the blood after muscular activity. The immediate influence of physical exertion upon the blood of the peripheral capillaries was one of concentration in which the percentage of increase varied: hemoglobin 3.5 to 10.9, erythrocytes 3.2 to 22.8, and leucocytes 13.8 to 130.2. Within a few minutes after the close of the exertion the blood began to be diluted, which usually resulted in a

[1] References to periodicals are given under the following abbreviations:
J. P., American Journal of Physiology.
J. Phar., Journal of Pharmacology.
M. R., Journal of Medical Research.
E. M., Journal of Experimental Medicine.
B. Ch., Journal of Biological Chemistry.
I. M., Archives for Internal Medicine.
J. A. M. A., Journal of the American Medical Association.

subnormal state of the above mentioned elements. At the close of an exertion the number of platelets and the differential counts of the leucocytes showed no change. Later the polymorphonuclears increased 9 to 45 per cent., the total number of mononuclear elements decreased 14 to 55 per cent., and the platelets became reduced, which, however, was followed by a period of over-production. A tightly drawn belt or pressure upon the abdomen prevents in a large measure the dilution of the blood. At an altitude of 14,000 ft. the blood does not concentrate during exercise. However, the changes in the white corpuscles and platelets occur as at the lower altitude.—Boothby and Berry (*ibid.*, xxxvii, 378) arrived at the conclusion that the percentage of hemoglobin and the number of red blood corpuscles are increased under conditions of work, which cause an appreciable amount of perspiration. If no perspiration occurs, there is no such increase.—Burton-Opitz (*ibid.*, xxxvi, 64) found that an increase in the intra-abdominal pressure increases the blood flow and blood pressure in the anterior part of the body.—Edmunds (*J. Phar.*, vi, 596) states that the injection of adrenalin in the intact animal gives no proof of the presence of vasomotor nerves in the portal vein. However, these can be demonstrated by a study of the volume changes of the liver in relation to the pressures in the vena cava and the portal vein when the splanchnic nerves are stimulated.—Porter (*J. P.*, xxxvi, 418) found that curare does not change the vasomotor tonus but increases the reflexes, so that stimulation of the sciatic nerve causes a greater rise, and stimulation of the depressor nerve causes a greater fall. He concludes that the tonus and the reflexes are represented in the vasomotor center by separate elements.—Martin and Mendenhall (*ibid.*, xxxiii, 98) studied the blood pressure condition in the nasal cavity by means of a plethysmograph. Weak stimulations produce a vasodilatation, strong stimulation causes a vasoconstriction; they assume, however, that even strong stimuli affect the vasodilator apparatus, which, however, is overpowered by the simultaneous action upon the vasoconstriction mechanism.—Stiles and Martin (*ibid.*, xxxvii, 94) in studying vasomotor reflexes obtained the following characteristic results. Stimulation of two afferent paths at the same time has often a more marked vasomotor effect than the stimulation of either path alone with an equivalent strength of current. When a pressor reaction declines, it can often be renewed by shifting the stimulation to another nerve, especially when this nerve is distant from the first. This may be accounted for on the theory that the afferent connections of the second nerve with the center are unimpaired by the stimulation of the first nerve.—According to Hoskins and Bowley (*ibid.*, 471) the irritability of the vasomotor mechanism is not augmented by an infusion of adrenalin; on the contrary, in most cases it is lessened, sometimes to a marked degree. The depression is probably both central and peripheral.—According to Brooks and Luckhardt (*ibid.*, xxxvi, 104) vomiting is accompanied by marked changes in the circulation. There is seen sometimes a period of elevated pressure, more frequently a sudden and enormous drop in blood pressure with cardiac inhibition at the moment of emesis.

Schlomowitz, Eyster and Meek (*ibid.*, xxxvii, 177) studied the relation of the sino-auricular and the auriculo-ventricular nodes to the chronotropic relations of the vagus nerves. Cooling of the sino-auricular node depresses the effect of vagus stimulation. Successive removal of the nodal tissue from the perfused beating heart *in situ* tends to show the close association of these structures with the chronotropic function of the vagus and lends support to the view that the control of the vagus over the automaticity of this tissue decreases progressively from above downward.—According to Meek and Eyster (*ibid.*, xxxviii, 62) intravenous injections of physiological amounts of adrenalin into intact unanesthetized dogs with good vagal tone invariably causes a decrease in the heart rate; the action is twofold, it accelerates the heart by direct stimulation and inhibits it re-

flexly through the vagus and the result depends upon the preponderance of either of these factors.—Gesell (*ibid.*, 404) studied in the winter terrapin the effects of changes in auricular tone and the amplitude of auricular systole on ventricular output, and found that perfusion of the heart with a constant venous pressure shows variation in ventricular output resulting from oscillations of auricular tone. Henderson assumed that auricular systole has no filling effect on the ventricles.

Secretion. — Weed and Cushing (*ibid.*, xxxvi, 77) obtained cerebrospinal fluid by passing a trocar through the longitudinal sinus into the third ventricle. They came to the conclusion that the fluid is secreted by the choroid plexus (choroidea) and that intravenous injections of extracts of the posterior lobe of the hypophysis increase the secretion of this fluid.—Frazier and Peet (*ibid.*, 464) studied the influence of certain substances upon the secretion of the cerebrospinal fluid, collected through a cannula which was inserted into the fourth ventricle. Extracts of spleen, kidney, pancreas, liver, testicle and ovary exert only a short indirect mechanical action by their influence upon the blood pressure. Extracts of brain and of the thyroid exert a direct specific action: brain increases and thyroid decreases the choroidal secretion.—The same authors report (*ibid.*, xxxviii, 93) that di-iodothyrosin exerts an inhibitory influence on the rate of secretion of the choroid plexus. The influence of idothyrin is little and can not be compared with the influence of saline extracts of fresh thyroid.—Cushing and Goetsch (*E. M.*, xxii, 25) found that hibernation is connected with changes in the ductless glands. The most notable of these changes occur, during the dormant period, in the pituitary body. The gland diminishes in size and the cells of the anterior part lose in some animals their staining characteristics. At the end of the hibernation period the gland swells and as the cells enlarge they again acquire their differential affinity for certain stains.—Simpson and Hill (*ibid.*, xxxvi, 347) found that prolonged injections of pituitary extract into lactating goats establish gradually a certain immunity, so that finally neither the quantity of the milk nor its fat content is influenced by these injections.—Solem and Lommen (*ibid.*, xxxviii, 339) found that pituitrin causes a diminution in flow of blood and saliva from the submaxillary gland. While they admit that the decrease of the flow of saliva may be in part due to the diminished blood flow in the gland, they believe that decrease is due in part at least to the inhibitory effect of the pituitrin upon the secretory nerves of the submaxillary gland.—According to Gruber (*ibid.*, xxxvi, 299) the vasodilator nerves of the submaxillary glands and the nerve fibres which control the salivary secretion react to the same threshold of faradic stimulation.—The investigations of Watts (*ibid.*, xxxviii, 356) lead him to the conclusion that stimulations of the cervical sympathetic nerve induce a vasoconstriction of the thyroids and induce also a decrease of the iodine and water content of the gland. A decrease of blood flow in the gland by mechanical means causes also a decrease of iodine and water content. The decrease of the iodine and water content, brought about by a stimulation, may therefore be merely a result of the vasoconstriction.—F. C. Mann and Della Drips (*I. M.*, xvi, 681) investigated the appearance of the pancreas, the quantity of the secretion and the character of its contents after the removal of the adrenals. Their experiments lead them to the conclusion that all the changes found in the pancreas, grossly, histologically and functionally after the removal of the adrenals, can be accounted for by the changes taking place in the organism as a whole; they were unable to demonstrate any specific relationship between the adrenals and the pancreas.

W. B. Cannon's *Bodily Changes in Pain, Hunger, Fear and Rage* (New York, D. Appleton & Co., 1915) is a very instructive book based on experiments of the author and his coworkers. In the center of the discussion stand the relation of the adrenal secretion to emotion, glycosuria, muscular contraction and fatigue,

and the coagulation of blood. A chapter is devoted to the nature of hunger. In other chapters the utility of the bodily changes in pain and great emotion, the interpretations of emotions, and the alternative satisfaction for the fighting emotions, are interestingly discussed.

Respiration.—Snyder (*J. P.*, xxxvii, 104) comes to the conclusion that the cause of the respiratory change of heart rate is neither a peripheral nor a reflex mechanism; it is an automatic mechanism located in the spinal bulb and consists in a depression of the vagal center.—Boothby and Shamoff (*ibid.*, 419) divided all branches of both vagi between the recurrent laryngeal and the two primary gastro-intestinal branches and studied the effects four months later. The normal gaseous metabolism and the respiratory mechanism to an increase in CO_2 and of O_2 was not changed; neither was there any disturbance in the respiratory rhythm in most of the operated animals.—Boothby and Berry (*ibid.*, 435) were unable to substantiate the theory that distension of the lungs inhibited inspiration by stimulation of the intrapulmonary endings of the vagus nerves.—According to Pearce and Carter (*ibid.*, 350) the oxygen consumption of the left kidney before and during the stimulation of the vagus below the level of the heart, after section of the left splanchnic nerve, remains unchanged. This offers evidence against the supposed existence of renal secretory fibres in the vagus nerve.—According to Henderson, Chillingworth and Whitney (*ibid.*, 1) the respiratory "dead space," which is practically of the same volume during rest and exercise, expands and contracts passively with the movements of the thoracic walls and lungs, a conclusion with which Haldane (*ibid.*, 20) practically concurs.—Hoover has previously shown that the concentration of carbon dioxide in the alveolar air is increased in emphysema and that this was due to impairment of the ventilatory function of the lung, and suspected that the dead space is increased in emphysema. In recent investigations by Hoover and Gammon (*I. M.*, xv, 501) it was found, among other results, that it is the want of diffusion of carbon dioxide in large respiratory excursions which has given rise to the error of supposing that the dead space is increased in emphysematous lungs.

Gastro-Intestinal Canal.—Carlson with his pupils continued to publish numerous studies upon the physiology of the stomach. With Ginsburg (*J. P.*, xxxviii, 1) he studied the hunger contractions of the stomach of the new-born. They found that the periods of gastric tonus and hunger contractions are in evidence shortly after birth and before any food had entered the stomach.—With Ginsburg and Tumpowsky, Carlson (*J. A. M. A.*, lxiv, 1822) established that the infant's stomach shows feeble contractions of the fundal end one hour after nursing. As the stomach discharges its contents, these tonus undulations gradually increase in frequency and intensity, until by the end of from two and a half to three hours these become transformed into vigorous hunger contractions. The various studies of the hunger contractions were made upon man and dog with empty stomachs. Rogers (*J. P.*, xxxvi, 183) undertook to study these movements in the rabbit, the stomach of which is normally never empty. He found, however, that when the animals are prevented from eating their own feces the stomach becomes empty after a 24-hours' starvation. His experiments led him to the conclusion that at least in this species of animals there are no sharp dividing lines between the normal peristaltic contractions occurring during digestion and those occurring during hunger, and that the gastric hunger contractions are intensified digestive peristalsis.—Rogers and Hardt came later (*ibid.*, xxxviii, 274) in their studies on man and dog to a similar view.—Brummeier and Carlson (*ibid.*, xxxvi, 191) found that the introduction of gastric juice, chyme, acids, alkalies, water, milk or oil inhibit the gastric hunger contraction and tonus. The inhibition takes place apparently primarily by a central reflex path and is due to chemical and mechanical stimulation of the intestinal mucosa.—Carlson and Braafladt (*ibid.*,

153) studied the sensibility of the human gastric mucosa and came to the conclusion that the normal mucosa is devoid of pain and tactile sensibility but temperature sensibility is present.—Luckhardt and Carlson (*ibid.*, 37) found that blood from starving animals or from animals in pancreatic diabetes transfused into normals, or excessive hemorrhage, acts as a temporary stimulus to the gastric hunger mechanism.—According to Carlson (*J. P.*, xxxvii, 50) the fluid contents of the "empty" stomach varies from 8 c.c. to 50 c.c.; the quantity is greater in the morning than at noon or 6 p. m. and on the whole is greater in the summer than in the winter. The gastric glands in the normal person are never completely quiescent. The secretion is rich in pepsin; when the secretion rate is low it is poor in hydrochloric acid.

Keeton and Koch (*ibid.*, 481) state that an evaporation of an acid extract from various tissues leaves a residue which manifests varying degrees of *gastrin* (Edkins) activity. The gastrin is uniformally distributed throughout the stomach mucosa, is found in much smaller concentrations in the duodenum and its presence can be just demonstrated in the œsophagus. Gastrin in intramuscular doses of one c.c. causes a fall of blood pressure lasting four to five minutes and a gastric secretion lasting one hour and longer. The authors believe that gastrin is a specific substance.

Meltzer (*I. M.*, xiv, 955) discusses the relation of magnesium sulphate to intestinal peristalsis. In all the experimental work on animals it was found that this salt, whether administered subcutaneously, intramuscularly, intravenously or even intra-intestinally not only does not cause any peristaltic movement but it paralyses it if it is present. Nevertheless, magnesium sulphate is employed to bring about purgation in which the process of peristaltic movements of the intestines is an important factor. Meltzer shows that the phenomenon of peristalsis consists in a paralysis of the intestinal section below and of a contraction of the section above a stimulated part. When $MgSO_4$ is taken by the mouth a part is converted into Na_2SO_4 which is readily absorbed and causes an excitation while the unconverted part causes an inhibition. Both parts together cause a peristaltic movement: an excitation above and an inhibition below.—Murphy and Brooks (*ibid.*, xv, 392) studied experimental intestinal obstruction. They found that simple obstruction of a segment of duodenum or jejunum results in earlier and severer symptoms than after similar obstruction of a segment of ileum. The symptoms are due to bacterial toxin which do not pass through a normal mucous membrane, which, however, may enter the circulation by way of the thoracic duct.—Hamburger and Friedman (*ibid.*, xiv, 722) studied experimental pyloric stenosis. Their conclusions are that moderate stenosis (in dogs) causes no change but marked obstruction causes motor insufficiency, continuous secretion (hyperacidity) and hypertrophy and dilatation of the stomach, while complete occlusion results in vomiting, convulsions and death of the animal in from 48 to 120 hours.

Glycæmia and Glycosuria.—Carlson and Ginsburg (*J. P.*, xxxvi, 217) found that complete depancreatization of pregnant bitches near term is not followed by hyperglycæmia and glycosuria as long as the fetus is alive and the placental connections are not severed. At the onset of labor the blood sugar begins to rise so that complete diabetes is established at the completion of delivery.—The same authors (*ibid.*, 280) report further that transfusion of normal dog's blood into depancreatized dogs causes a temporary lowering of the hyperglycæmia and the glycosuria; the blood transfusion as such does not impair the activities of the kidneys in any demonstrable way.—Kleiner and Meltzer (*Proc. Nat. Acad. Sci.*, i, 338) found that intravenous infusion of large quantities of glucose does not exert a deep and prolonged effect; in less than two hours the sugar content of the blood is normal again. This is visibly retarded in depancreatized dogs; but this retardation is greatly abolished by a simultaneous infusion of a pancreas emul-

sion.—By using Abel's vividiffusion apparatus with some modifications, of which the pulsation of the dializing tubes is the most important one, von Hess and McQuigan (*J. Phar.*, vi, 45) seem to have definitely demonstrated that the sugar in the blood exists in simple solution in the water of the plasma.

Nervous System. — According to Forbes and Sherrington (*J. P.*, xxxv, 369), in the cat, even within a short time after a complete removal of the cerebral hemispheres, striata, thalami, corpora geniculata and the anterior portion of the anterior colliculi, certain acoustic stimuli excite reflex movements of the pinna, neck, tail and limbs. This suggests that such stimuli can excite purely reflexly a certain amount of orientation.—Mendenhall (*ibid.*, xxxvi, 57) applied quantitative stimuli to the cervical sympathetic and found that the response to increasing strength of stimulus occurs in the order: pupil, nictitating membrane, and nasal vessels.—Porter (*ibid.*, 171) studied in the spinal cord the variations in irritability of the reflex act under the influence of strychnin. Flexion reflexes are frequently present, the threshold of which is not lowered by strychnin; but more commonly the threshold of these reflexes is unmistakably lowered. The crossed extension reflex becomes lowered nearly to the flexion reflex by strychnin. A flexion threshold which is abnormally high under the influence of ether or asphyxia is lowered by strychnin to approximately the normal level.—Smith and Porter (*J. P.*, xxxviii, 108) studied spinal anesthesia in the cat by injections of novocain and tropocain. In 20 animals there was but one case in which a moderate but adequate injection in the lumbar region caused a fall in blood pressure that might have been serious; in eight cases in which no curare was used there was no paralysis of respiration. The fall in blood pressure is due to paralysis in the splanchnic region and not to the bulbar vasomotor center. Regarding the diffusion of the drug the bulk seemed a factor of greater importance than the strength of the solution.—Auer (*E. M.*, xxi, 43) studied the effect of intraspinal injection of 0.3 per cent. tricresol antimeningitis serum. Monkeys are considerably more resistent than dogs. The main danger comes from the respiration; dogs recover from a great fall in blood pressure if intratracheal insufflation is maintained. The effect is interpreted as being due to excitation and not to paralysis of the centers. Increase of intraspinal pressure was found to be an important factor.

Pharmacological Studies.—Macht (*J. Phar.*, vi, 13) studied the action of a large number of drugs on strips and rings of surviving pulmonary arteries. Adrenalin causes a powerful constriction; after ergotin this action is inhibited. These observations speak in favor of a vasomotor supply of the pulmonary artery. Digitalis bodies produce constriction, except digitonin which causes a dilatation. The nitrites were found to produce a constriction of the pulmonary artery. —Richards and Wood (*ibid.*, 283) in a study of the action of strophanthin upon suprarenal secretion arrived at the conclusion that strophanthin is capable of stimulating the central nervous mechanism controlling the secretion of the suprarenal glands. This conclusion is derived from the fact observed by them that the intravenous injection of this drug is regularly followed by the development in the blood of the capacity to cause decrease of tonus and inhibition of contractions in an isolated strip of intestinal muscle in a manner indistinguishable from that possessed by adrenalin.

By the method developed by them and described some three years ago (*A. Y. B.*, 1912, p. 609), Sollmann and Pilcher published in 17 communications (*ibid.*, 323-409) their studies of the effect of numerous substances upon the vasomotor center. Nitrites usually stimulate the vasomotor center moderately; the fall in pressure is purely peripheral. Very large doses of strychnin are usually without action on the center. Neither does adrenalin have any direct effect. Chloroform directly depresses the vasomotor center. Cyanides cause intense stimulation of the center. Non-toxic doses of aconite are without effect. Nicotin causes intense

stimulation of the center. Spartein is without direct action. Phenol usually depresses the center, probably by direct toxic action. Cholin tends to produce a marked direct depression of the vasomotor center. Ergot and ergotoxin have practically no effect; histamin also has no direct action, but the fall of blood pressure and respiratory disturbance usually produce a moderate stimulation. Hydrastis and its alkaloids and derivatives have no direct action. Strophanthus stimulates the center moderately; digitalis not at all, or to a much less extent. Ether does not produce any direct effect on the center or stimulates it moderately. The active principle of the infundibular portion of the pituitary gland has but slight effect on the vasomotor center. Lactic acid produces moderate and temporary stimulation of the vasomotor center.

PATHOLOGY AND BACTERIOLOGY

MARTHA WOLLSTEIN

General Survey of Progress.—The year 1915 has been one of steady work and progress along various lines, all leading to the practical end of a better understanding of the etiology and pathology of disease and thus to an enlightened therapy. The most important contribution to the subject of medical bacteriology made in the course of the year is the work of Plotz, Olitzky and Baehr, which proves that the anaërobic organism described by Plotz in a preliminary communication of 1914 (*A. Y. B.*, 1914, p. 691) is the specific etiological factor in typhus fever. The timeliness of this discovery is apparent in view of the increased prevalence of typhus fever in Serbia and Russia, as is the opportunity to test both prophylactic and curative treatment of the disease with specific methods. The report of the work now being done by Plotz in Serbia will be awaited with great interest.

Work on pneumonia and on the resistance of the organism to the growth of malignant neoplasms has brought out illuminating facts and presented new problems for solution. In the field of immunology observations on the decisive part played by the agglutinins in bacterial infections help to explain the mechanism by which some animal organisms resist certain infections while others succumb to them. Finally, vaccine virus has been grown in a pure state, without the admixture of bacteria, and an ideal form of virus for the vaccination of human beings has thus been achieved.

Typhus Fever.—In their very complete piece of work, Plotz, Olitzky and Baehr (*Jour. Infec. Dis.*, xvii, 1) bring proof that typhus fever is caused by a short, pleomorphic, anaërobic bacillus which is Gram-positive, measures 0.9 to 1.93 microns in length, and is one-fifth to three-fifths as wide. It possesses neither motility nor a capsule, and does not form spores or gas. Degeneration and involution forms appear early. The thermal death point is 55° C. applied for ten minutes. The name *B. typhi exanthematici* has been given to the organism.

The organism was isolated from the blood of typhus-fever patients during the febrile stage of the illness, and was absent after the crisis except in two endemic cases. The bacillus found in endemic typhus differed in no way from that obtained from epidemic cases of the disease, but the bacteriemia was more intense in patients suffering from the epidemic than from the endemic form. The bacillus was never present in the blood of control cases suffering from other febrile diseases, of which 198 were studied. With the blood of patients the disease was produced in guinea pigs and monkeys, and typical bacilli were recovered from the blood of the animals. The connection between the bacillus and typhus fever is demonstrated by the positive reaction of the patients' serum to tests for immune-bodies in the form of agglutinins, precipitins and complement-fixing bodies, when such tests were made with antigens prepared from cultures of the organism. Control cases invariably gave negative results. The immunological reactions appear near the time of crisis and

increase in concentration in the post-critical, afebrile stage.

Anderson has been able to cultivate the *B. typhi exanthematici* from the blood of guinea pigs inoculated with the virus which he has been keeping alive for several years (*A. Y. B.*, 1914, p. 692) and which was originally obtained in Tunis.

Whether specific therapy with vaccines or immune serum made with these bacilli will be effective as a prophylactic or curative measure remains to be seen. Certainly the fact that the specific bacterium of this contagious disease can be grown and studied is a great step toward its final elimination. When we consider that typhus fever is always present in New York City in an endemic form, and that the bacillus present in endemic cases differs in no way from that found in the epidemic form of the disease brought here by immigrants from the Balkans, we realize how important this discovery really is. (See also *Medicine*, and *Public Health, infra.*)

Cancer.—The most important contribution in the line of cancer research made during 1915 is the work of Murphy and Morton, continuing Murphy's "Studies in Lymphoid Activity" (*Jour. Exper. Med.*, xxii, 204). It was shown by Heinke ten years ago that the X-ray effect is manifest first in its destruction of the lymphocytes, which are white blood cells having a single nucleus and formed in the lymph nodes and spleen. Murphy and Morton found that they could regulate doses of X-ray so as to destroy the major portion of the lymphoid system of the mouse without causing apparent injury to other tissues or to the general health of the animal.

Animals which are immune to cancer develop an increased number of lymphocytes in the blood after inoculation with tumor grafts. But if these immune animals are first exposed to X-ray their immunity disappears with their lymphoid system, thus showing that the lymphoid crisis is essential to the immunity. In animals not immune to cancer, but in which inoculation is successful and a tumor grows, no increase of lymphocytes takes place.

Another point in favor of the relation between lymphoid activity and cancer growth is the fact that animals from which the spleen has been removed show less resistance to the growth of inoculated cancer than do normal animals. The spleen is one of the chief lymphoid organs in the body. The observers are not yet prepared, however, to discuss the mechanism of lymphoid action in cancer immunity.

Rhinitis. — The bacteriology of acute rhinitis, acute coryza, or "cold in the head," has been the subject of many investigations, but the results thus far obtained have been inconclusive. Tunnicliff, in 1913, described an anaërobic bacillus present in the early stages of rhinitis, before the discharge from the nose became purulent. The studies on the subject have been continued, and Tunnicliff is now able to report that this long, strictly anaërobic, Gram-negative, immobile bacillus is present in 98 per cent. of cases of acute rhinitis, in 90 per cent. of chronic cases with mucoid discharges, and only in six per cent. of normal noses. Moreover, antibodies (opsonins and complement-binding bodies) were demonstrable in the blood of patients having rhinitis. In two human subjects and in a dog coryza was produced by swabbing the nose with a pure culture of this organism. The results of human immunization experiments with vaccines of the bacillus rhinitis will be reported later (*Jour. Infec. Dis.*, xvi, 493). The importance of such immunization against acute rhinitis, with its annoying symptoms and dangerous sequelæ, is very great.

Pneumonia.—An interesting contribution to our knowledge of the epidemiology of pneumonia has been made by Dochez and Avery (*Jour. Exper. Med.*, xxi, 114). The pneumococcus, which is the specific cause of lobar pneumonia, is present in the mouth of a certain percentage of normal persons. It was shown in 1913 that pneumococci are not alike, but that they fall into four definite groups according to their immunological reactions. About 75 per cent. of all strains of pneumococci isolated from lobar pneumonia are comprised in the fixed groups I, II, III, while only 25

per cent. fall into the heterogeneous group IV. These cocci do not change from one type to another and show no tendency to lose their specific characters. The members of the four groups differ in their degree of virulence for human beings. Thus, groups II and III cause the severest forms of pneumonic infection, while group I has a definitely lower mortality rate than the other two. The lowest grade of virulence is shown by members of group IV, and though pneumonia caused by them may run a severe course, a fatal termination is unusual. The frequency of these groups has been found fairly constant from year to year in New York. The same groups have been encountered in other cities in the United States and in Germany, while in South Africa five groups have been found, three corresponding to I, II, and III and the other two not as yet isolated in New York City.

Dochez and Avery studied the pneumococci occurring in normal sputum in order to prove the truth or fallacy of the commonly accepted fact that pneumonia results from an autogenic infection with cocci habitually present in the mouth. The results of the investigation showed that all the pneumococci isolated from normal individuals belonged to group IV, which is of low virulence and causes only 25 per cent. of cases of pneumonia. Consequently, the majority and the more severe cases of pneumonia are not due to pneumococci found in normal mouths. Patients convalescing from typical cases of pneumonia were next studied. It was found that the virulent cocci persisted in the mouth for a period of 12 to 90 days, and were gradually supplanted by the type which occurs in normal mouths, the rapidity of their disappearance being in direct proportion to the rapidity with which the pulmonary lesion healed. While pneumococci were found in the sputum in 58.4 per cent. of normal individuals, in only 9.6 per cent. did these cocci belong to the disease-producing types, and in every instance the persons harboring them had been in intimate association with patients ill with lobar pneumonia (*ibid.*, xxii, 105). These persons are healthy carriers of disease-producing types of pneumococci. There are two sources of danger, then, in the spread of pneumococcus infection; first, healthy carriers among the patients' associates; and, second, those patients who harbor the virulent cocci for a considerable period of time. In other words, the majority of cases of lobar pneumonia are due to direct or indirect contact with a previous case, and are not of autogenous origin.

In view of the therapeutic use of antipneumococcus serum in the treatment of patients ill with lobar pneumonia, Bull's observations on its curative action are of great interest. It is known that active anti-pneumococcus sera agglutinate pneumococci *in vitro*. Bull (*Jour. Exper. Med.*, xxii, 457), working with rabbits, found that the cocci are also clumped in the blood of the living animal, and he further observed that antisera injected into the circulation of rabbits suffering from pneumococcus bacteremia caused a rapid disappearance of the cocci from the blood. This disappearance was due to the clumping of the cocci and the removal of the clumps by polymorphonuclear leucocytes in the capillaries of the organs, especially in the liver, spleen and lungs. This action of the antiserum upon the agglutination of the infecting bacteria and the subsequent activity of the polynuclear leucocytes in digesting the agglutinated cocci have not been presented before, and means that an adequate explanation of the activity of an anti-infectious serum must take into account not only numerical proportion of bacteria and immune bodies, but the limit of leucocytic activity as well.

Agglutination of Bacteria in Vivo.—To the stimulus of bacterial infection the cells of the animal organism react by forming certain substances which will help to destroy the bacteria and thus protect the animal by making him immune. Such substances are demonstrable in the blood of the infected animal by definite tests, and are known under the group name of immune bodies. Some of the immune bodies found are: agglutinins, in virtue of which the bacteria are grouped or clumped and their motion inhibited; bacteriotropins, which

allow the bacteria to be ingested by the white blood cells; lysins, which cause solution of the bacterial bodies. Precipitins, complement-binding bodies, and antitoxins are all immunity principles. It has been the rule to assign to the agglutinins the lowest place in the scale of immunity value. Bull (*Jour. Exper. Med.*, xxii, 484) has performed a series of interesting experiments which demonstrate the significance and value of agglutinins in the circulating blood of living animals which have been infected with bacteria. He shows that agglutination of bacteria in the blood is, in fact, the decisive mechanism which determines whether the animal is to develop a fatal septicemia or be protected from the bacteria inoculated. When the blood of the animal is able to agglutinate the inoculated bacteria, the clumps are carried to the internal organs and there destroyed by the leucocytes, thus being rapidly removed from the blood. Consequently the animal recovers and the bacteria are proven to be non-virulent for that animal. When, on the other hand, the blood does not agglutinate the bacteria, these remain in the blood and multiply there, the leucocytes do not destroy them and the animal dies in consequence of infection with a virulent organism. The bacteria tested in this way were pneumococci, typhoid bacilli, dysentery bacilli, and influenza bacilli.

It is plain that an animal's natural or acquired immunity to a given bacterium can be explained by its ability to agglutinate that bacterium *in vivo*, and, on the other hand, the virulence of a bacterial strain depends upon its resistance to such agglutination. The agglutination reaction *in vivo* takes place far more quickly than does a similar reaction *in vitro*. Further work along these lines should bring out illuminating details in immunology, explaining not only how an immune serum does its work, but the limit of its activity (dosage) as well.

Ferments and Antiferments.—For several years Jobling and Petersen have been working on ferment action. Some interesting explanations of facts known in human pathology and immunology have been the result. (*Johns Hopkins Hosp. Bull.*, xxvi, 356). It was first shown that the ferments normally present in the economy may split toxic substances from proteins, and that such ferment action may be prevented by the action of antiferments in the form of unsaturated fatty acids. The lipoidal nature of the antiferments was proven by their removal from sera by means of chloroform and ether. Furthermore, the interesting fact developed that sera thus deprived of their antiferments became toxic for animals; that is, their exposed serum proteins were split into toxic substances by the normal ferments in the body of the animal into which they were inoculated.

Further experiments gave evidence that the iodides lower antiferment activity, and the authors concluded that iodine combines with the unsaturated fatty acids which act as antiferments in the blood and in broken-down tissue, such as cheesy material in tuberculosis and in syphilis. The action of the fatty acids as ferment-inhibiting substances is therefore prevented, the ferments are able to act, and the necrotic tissue is completely broken down or autolysed, with the result that the infecting organism (in the case of syphilis the *Treponema pallida*) is exposed to the action of germicidal agents (mercury or salvarsan). This is the first rational explanation offered for the use of iodine in the treatment of syphilis.

Vaccine Virus.—The specific organism of vaccinia, which is a mild or attenuated form of smallpox, has not yet been isolated, although vaccination against smallpox has been practiced since 1796. The material for such vaccination is taken, as a rule, from the contents of the skin vesicles characteristic of the disease in calves. It has never yet been possible to produce a vaccine entirely free from bacteria. The method in general use is to transmit the virus of vaccinia from the skin of one calf to another, and contaminations from the skin and air are unavoidably present. Glycerinization of the virus for a period of one to three months is the method usually employed to get rid of the bacteria. While, at the end of that time, the bacteria which remain are

practically harmless, the vaccine has lost in strength, and glycerine has almost no action on bacterial spores. Noguchi (*Jour. Exper. Med.*, xxi, 539) inoculated vaccine virus on the shaved skin of rabbits, and made an emulsion from the contents of the characteristic vesicles, eliminating bacteria by means of ether. The bacteria-free emulsion was then inoculated into the testicles of rabbits and subcultured through 60 generations; indefinite transfer seemed probable. It was also grown in the testicles of young bulls. The virus multiplied in the testes, reaching its maximum on the fourth or fifth day, and declining after eight days. Emulsions in sterile salt solution from such testes made a bacteria-free, pure vaccine. Human beings reacted in a typical manner to this bacteria-free virus. No secondary infection occurred in the positive reactions, and no pain or fever developed. This method of producing pure strains of vaccine virus is more economical than the method generally employed, and for human vaccination it supplies an ideal vaccine.

Tissue Growth.—Uhlenhuth's observations (*Jour. Exper. Med.*, xxii, 76) throw new light on the question why the cells in the body assume their special forms. He found that the morphology of the cell is dependent upon the consistency of the medium in which it grows, that is, upon physical influences in and around the cells themselves. Thus, in fluid media the cells are round; in soft media they are fusiform or thread like; in semi-firm media they are fusiform; and in firm media they are polyhedral. Then neither functional stimulus nor any inhibiting influence is needed to explain variation in cell forms. This would seem to have a wide application in normal and pathological anatomy.

MEDICINE

ALEXANDER LAMBERT and HARLOW BROOKS

Effects of the European War on Medical Progress.—As an inevitable result of the European War, great hindrance to the progress of medicine has become evident. Many of the foremost investigators of all lands, including our own, have gone to the front or have otherwise identified themselves directly with military medicine or with its social and surgical problems. Quite naturally medical journals also have concerned themselves chiefly with the insistent questions consequent upon the war, and as a result research medicine, in common with progress in the arts, amenities and pure sciences, has been largely at a standstill.

Military Medicine.—It is common knowledge that many previously conceived ideas as to surgical management during military operations have been greatly modified or altered as a result of the unusual strain imposed by modern warfare. (See *Surgery, infra;* and *A. Y. B.*, 1914, pp. 701-4.) To a certain extent, similar essential modifications have appeared in the theoretical concept of the medical problems of warfare. For example, it has been generally argued that drinking water for the use of troops should be distilled or at least boiled, but in the extensive operations of this war, this safe but cumbersome and troublesome method has been found to be impractical and has been replaced in large part by the use of chemical methods, as by chlorine gas, which, while perhaps theoretically less satisfactory, has the great military advantage of a high degree of portability and practicability.

Trench operations and the more universal and more destructive use of artillery have prevented in this war the customary civilized prompt collection of injured or diseased men from the firing lines so that infection of wounds, gas phlegmons and such grave medical complications as pneumonia and general septicemia have greatly increased in their occurrence. The old custom of the collection of the injured under flags of truce has generally been abolished, and this has tended of course greatly to increase suffering and disease. These conditions have excited many medical and scientific men to bend great effort to the questions of preventative inoculations or vaccinations. Apparently vac-

cination against typhoid fever, which has been extensively practiced, especially by the French, is meeting with good results, though perhaps not the universal success which its enthusiasts had expected. Preventative vaccination or immunization against tetanus, which, due to the highly infected soil of the battlefields, has been very frequent, has also apparently worked out well, and even the treatment of this disease by antiserum or by magnesium sulphate has had good success. Studies along these lines to immunize men against sepsis or gangrene before going into action are being carried out, but as yet reports are too brief or too poorly collated to admit of more than hopeful consideration. Undoubtedly as a final result of this war much will be learned as to the control of epidemic disease, of dysentery, cholera, plague, and notably of typhus fever, but unfortunately the brutality of military customs or necessities has prevented any general publication of such studies as are being now made.

It has been most gratifying to find that no dearth of medical men willing to accept military service has existed, but, on the contrary, every belligerent power has been deluged with offers of volunteers from neutral as well as their own peoples. Though doubtless in some instances such unprepared services have proven a hindrance rather than an aid, it is at least a very satisfactory index of the attitude of medical men throughout the world. It is also a matter of no small pride to the medical profession that though all other sciences, arts and business methods have been levied upon further to decivilize and brutalize warfare, the skirts of the medical profession on all sides have remained clean. In so far as circumstances have permitted the care of the wounded, it has been carried out on the old lines of humanity which have long characterized the medical profession in these matters. In not a few instances, however, these beneficent ideals have been circumvented by the domination of the militarist. Instances of the willful infection of bullets or shells, of the infection of water or of otherwise designed spread of infection, though few and rarely hinted at, have been traced when suspected not to brutalized medical men but to their military superiors.

The Medical Brotherhood.—One of the few favorable outgrowths of the war has been the organization under the initiative of Dr. S. J. Meltzer of the Medical Brotherhood, an association of physicians and scientists without regard to nationality, in an attempt to promote and augment the altruistic ideals of the medical profession along lines permitted and encouraged by all civilized nations even in the military medical services. As a result it is hoped that the general professional feeling antagonistic to unnecessary brutalities in the course of war may be developed to such a degree as eventually to become a factor of great idealistic importance tending toward the ultimate resort to other than military means for the settlement of international disputes. The purposes of this organization are in no way detrimental to patriotism, nor even to the acceptance of military service, but rather to the elevation of humanitarism. The organization has received the support and comprises the membership of nearly all the leaders in medical thought in America and its principles of faith may be subscribed to universally, entirely independent of personal and national prejudices. The professions of foreign neutral countries have warmly endorsed this organization, and over 44,000 members are now enrolled. Of course no activity is contemplated at present among the physicians of the warring nations, but the hope is expressed that at the end of the war this organization may work effectively to restore that unity and altruistic spirit, above that of mere nationalism, which will be so necessary if medical science is again to coöperate unitedly as in the recent past to advance the medical sciences and other humanities.

Prohibition of Alcohol.—One of the most interesting medical results of the war has been the very rigid limitation or prohibition of the use of alcohol, not so much among the fighting units as in the home population of the warring nations. That these proscriptions have resulted well goes without saying, though so far as the

struggle has progressed, it can hardly be asserted as yet that troops entirely deprived of alcoholics have been shown to be more effective as soldiers; in fact, in so far as present conditions go, the opposite would appear to be the case. A statement of Jane Addams as to the use of alcohol to inspire valor is, of course, entirely without real or even theoretical corroboration. The very beneficial effect of total abstinence on the civil population, particularly in Russia, appears, however, to be conclusive. Its effect on physical disease and military efficiency still remains to be determined.

Typhus Fever.—As a result of the war, typhus fever has again become a problem of world importance, and beyond doubt the very definite knowledge of the routes of infection transmission resulting from the work of Rickits, Goldberger, and, most recently, from the researches conducted at the Mt. Sinai Hospital in New York have become of great practical value. (*Trans. N. Y. Path. Soc.*, 1915.) Plotz, Baer and Olitsky of Mt. Sinai have elaborated a vaccine as a result of their studies, previously recorded (*A. Y. B.*, 1914, p. 692), the value of which in the prevention of typhus is now being tested out practically. The clinical and bacterial as well as the serological identity of Brill's disease and typhus fever has been established by these students, and the correct explanation of the great variation in clinical picture and particularly as to the degree of infectiousness has been probably established. It remains to be seen whether the very greatly increased elemental knowledge of the infection will admit of such practical application as to permit better control of this disease, which in past wars has frequently been of greater importance as a death factor than military destruction. Joint scientific and clinical studies are being carried out by American physicians working in Serbia. (See also *Pathology and Bacteriology, supra,* and *Public Health, infra.*)

Digitalis Therapy.—As more exact methods of determination of drug effects have been developed, a good many drugs have been proven to be of little or no value. Quite a contrary conclusion has been reached in regard to other drugs, especially of late from studies of the use of digitalis. Cushny, as a result of animal experimentation some 18 years ago, showed how this drug acts and pointed out more or less definitely not so much the limitations of the drug as the results which might be reached by the correct administration of proper doses in properly selected cases. Recent studies by Cary Eggleston, Theodore Janeway and others have again impressed upon all clinicians the almost certainty of benefit from the proper use of this drug in a very wide range of cases, in not few of which, from mere custom and theoretical evidence, the drug was previously believed to be detrimental. Eggleston has particularly shown the benefit of large doses, and Cushny, Mackenzie and others have demonstrated that, contrary to previous opinions, it may be beneficially and safely utilized for long periods. The symptoms of digitalis poisoning are in themselves so characteristic and manageable that little harm is likely to follow, even from the overuse of the drug, which may therefore be pushed until, as Cushny states, its effects are reached, irrespective of the exact dosage given. Such studies as these are fast establishing drug usage on a firm basis and therapeutic nihilism, so long ultra-fashionable, is giving way to exact and definite drug usage under scientific direction.

Tests of Renal Efficiency.—It has long been recognized that the ordinary urinary tests, chemical or microscopic, are often very misleading evidence as to the actual presence or absence of disease of the kidneys. It has also been indubitably shown that serious, even fatal, kidney disease may exist without disclosing any of the characteristic symptoms or signs which usually typify this class of disorder. Methods to assist in the more certain diagnosis of disease of the kidney have been extensively practiced of late, and they are designed not only to detect subtle disease of these glands but also to afford some estimate of the character and extent of the process present. The same methods may be used also to measure in

a more or less definite way the excretory possibilities of the normal organ in any individual case. In brief, the tests are conducted by injection into the body of a definite amount of a chemical substance which has been shown to be excreted chiefly or exclusively by the kidney, and qualitative and quantitative recognition of which is easily established and determined. When this is done under specific conditions the excretory possibilities of the kidney are quite definitely indicated. While such methods are, of course, more or less invalidated by individual peculiarities or sensibilities, on the whole they have been shown to possess very definite value in affording an additional means of early detection of disturbances of the kidney particularly. Griessmann (*Deutsch. Arch. f. Klin. Med.*, cxix, 32) and others claim to reach similar results by the use of salt and other chemicals or food elements, thus attaining a true functional diagnosis of renal disease. Methods based on a similar theory but involving the employment of other test substances are also being employed; by such measures the ability of the pancreas to digest foods, of the liver to metabolize sugar, etc., are being utilized to very signal advantage in the determination of the functional ability of viscera.

Blood Nitrogen in Prognosis of Kidney Diseases.—It has long been recognized that it is a most difficult matter to determine specifically in any given instance the status of a case of kidney disease, and especially to prognose exactly the probable outcome. A new method has come into use during the past two years and is now a more or less routine matter in the more advanced clinics by means of which the amount of waste or poisonous nitrogen present in the blood can be ascertained definitely and with reasonable ease. It has been shown that from the amount of blood nitrogen thus retained a quite correct prognosis is possible in some forms of renal disease. The method permits of the much earlier employment of vigorous methods of treatment in suitable cases and appears to be very accurate in results.

Effects of the X-Ray on the Blood. —As a result of the studies of Wermel, who has shown that even for long periods after exposure to the X-ray the blood shows evidences of its activity, Glaubermann (*Munch. Med. Wochschr.*, lxi, 1867) has found that the injection of serum from animals exposed to the X-ray into experimental rabbits produced striking alterations in the blood of these animals. A prompt but short period of leucocytosis is induced, then a reduction in the number of white blood cells below the normal. The strong possibility of doing definite harm when this agent is ignorantly or carelessly used is shown.

Thyroid Derivatives. — Attention was called in the last issue of the YEAR BOOK (p. 696) to the recent great activity in the study of the ductless glands and the very definite and important clinical results which have been achieved in the treatment of hitherto hopeless conditions as a result of such works. In continuation of such studies, probably the most important contribution which has appeared during the year is that of E. C. Kendall (*Jour. Am. Med. Assn.*, lxiv, 2942). Kendall has apparently isolated from the thyroid gland a crystalline substance, containing iodine in high percentage, which appears to possess at least some of the most important physiological materials which make the secretion of this gland an essential to life, and disorders or deficiencies of which cause many disease manifestations. If these discoveries are verified, it will be possible henceforth to treat more accurately the various disorders depending upon aberrations of thyroid action and at the same time a great advance is made in our understanding of the processes elementally concerned in ductless-gland activity.

Clinical Calorimetry. — Notable progress has been made during the year, particularly in America, in the study of various physiological and disease problems by means of the calorimeter, a complicated chamber previously utilized chiefly in the experimental study of physiological problems in the lower animals. Benedict of the Boston Nutrition Laboratory of the Carnegie Institute and

Lusk, DuBois, Coleman and their associates in the Sage Institute and in Bellevue Hospital, New York, have applied this method of study in a very practical way to the human and especially to those disease problems in which the dietary, nutrition and body metabolism are the chief factors in question. The results of these studies are immediately available and are already stated sufficiently clearly to be of very practical benefit in the management of many disease conditions. A large and entire supplement of the *Archives of Internal Medicine* (May, 1915) has been devoted to the most recent of these intensely practical and illuminating researches.

Erythema Nodosum.—Erythema nodosum is a disease, hitherto of unrecognized causation, which is characterized by the production of areas of inflammation in the skin. The general symptoms of an infection or septicemia are usually present and occasionally the condition becomes very serious. Rosenow (*Jour. Infec. Dis.*, xvi, no. 3) reports the discovery in this condition of a specific and hitherto undescribed bacillus which is found both in the lesions and also in the blood of persons suffering from the disease. Rosenow claims to have been able to reproduce a similar disease in experimental animals by the injection of this organism, which he believes in no inconsiderable number of cases enters the circulation through diseased tonsils.

Diphtheria.—Researches conducted under the direction of Park of the New York City Department of Health have recently been reported, detailing extensive studies of the dosage and effect of diphtheria antitoxin. In brief, it has been shown apparently that the smaller doses are equally effective as compared with the larger ones. The manner of administration is an important factor; named in the order of relative effectiveness, the methods are by intravenous injection, intramuscular injection, and subcutaneously. The first method is most beneficial in very serious cases but the second is commonly sufficient. Subcutaneous injection is less durable and not advisable. As has been long recognized, administration by mouth is entirely without effect. The Schick test (*A. Y. B.*, 1914, p. 691) may be utilized in the course of treatment to determine when a sufficient dosage has been reached. The same authority concludes further that small doses are almost, if not entirely, as efficient in the immunization of susceptible persons as larger ones. It is but just to state that Park's conclusions as to the efficiency of the smaller doses of antitoxin are disputed by others, some of whom advocate massive doses of as much as ten times the amount advised by Park.

Medical Education.—Notwithstanding the depressing world conditions present during the year, continual advance has been made in the requirements for medical education, and with the limitation of the possibility of foreign study is developing a renewed interest in postgraduate study in America. Not only are most states demanding a certain, but by no means excessive, modicum of preliminary education before it is permissible to take up the study of medicine, but several states, and others are rumored to shortly follow, are exacting a certain amount of practical clinical experience after graduation before license to practice is granted. This is a very difficult problem for the inhabitants of the smaller cities to meet, but it is of infinite value for the progress of the average practitioner and for the welfare of the public. It is possible, however, that medical education may become eventually so expensive as to time and money invested before any income can be won that the supply of doctors in the more sparsely populated districts may become insufficient and a reversion to domestic medicine follow. This is already indicated by the increasingly frequent employment of nurses, the best less adequately equipped for real medical work than the worst of doctors, for work previously exclusively limited by law to physicians. This is evident even in the great cities of this country. Doubtless a satisfactory mean will be finally reached, but, it is to be hoped, not along the road of decreased clinical experience. (See also xxxii, *Education.*)

Schools for Public-Health Officers.—So much in the way of special equipment is now required by hy-

gienists and public-health officers that a movement is now on foot for the special preparation of those physicians who wish to qualify themselves for these important positions. Several schools, notably Harvard University in conjunction with the Massachusetts Institute of Technology and the medical school of New York University, are now offering courses leading to the additional degree of D. P. H. The indication is strong that appointment to such positions will shortly demand some such definite special preparation.

A Universal Medical Examining Board.—One of the serious drawbacks in the licensing of medical practitioners in this country has been the fact that there has been no uniformity of requirements in the various states and it has been necessary for a physician wishing to practice in states other than that in which he was originally licensed to take another examination, though an exchange system has been arranged in some instances. This defect, already largely removed in Canada, bids fair to be removed, at least in part, in the United States by the recent formation of a voluntary board of medical examiners composed of the surgeons-general of the Army, the Navy, and the Public Health services, and well known physicians from various parts of the country. Only selected men filling certain requirements as to hospital experience, education and physical fitness will be accepted by this board, but having passed the rigid examinations proposed, the successful candidates will be entitled to enter without further examinations the Army, the Navy or the Public Health Service, whenever they may be required. At the same time many of the states have already signified their willingness to grant these men license to practice without further examination. It is to be expected that all the states will eventually accept the ratings of this board and a long step toward universal medical licensing in the United States will have been accomplished.

SURGERY

ALEXANDER B. JOHNSON

Surgical Problems of the European War.—Statistical reports on wounds from European hospitals are as yet meager. A general statement made by all observers is that most of the wounds are infected. This is due, first, to the large proportion of wounds from shell fire, shrapnel bullets and shell fragments, which carry dirt, fragments of clothing and equipment into the tissues, rendering infection almost inevitable, and, second, the prevalence of trench fighting, making it difficult for the soldier to keep his person and clothing clean. In a personal communication from a Russian source the writer is informed that of 3,000 wounded received at a Red Cross hospital at Kiev, 95 per cent. of the wounds were infected on admission. Pyogenic infections were the rule, while gasogenic infections and tetanus were not rare. The only clean wounds seen were made by undeformed rifle bullets.

In short-range rifle and machine-gun firing the number of killed and wounded is appalling and the mortality among the wounded high, for reasons discussed at length in the last issue of the YEAR BOOK (p. 702). Journee gives the following estimate of the mortality from rifle fire: killed, 25 per cent.; seriously wounded, 15 per cent.; slight injuries, 60 per cent. The relative frequency of rifle and machine-gun bullet wounds and of shell and shrapnel wounds cannot be given authoritatively. The latter are very frequent, though the ratio must vary with the character of the fighting. The incidence of cold-steel wounds, bayonet, saber and lance, has risen to five per cent.

While wounds of all regions are seen, compound fractures of the extremities and of the lower jaw, other wounds of the face and head, and wounds of the left forearm and hand are very frequent and constitute a large proportion of the cases treated in the base hospitals, since they bear transportation better than some other group of wounds.

Wounds of the Extremities.—Nothing new of a very striking nature

has been devised in the treatment of gunshot wounds. The writer has the impression that much of the surgery done has not been up to the best standards. At some of the base hospitals in France, infected compound fractures of the extremities have been received encased in a circular plaster-of-Paris splint, often with disastrous results. During the early months of the war, the tendency was toward extreme conservatism in the treatment of these cases. At present, amputations are performed in a larger proportion of cases. The so-called Balkan splint is in common use in hospitals and it has the advantage of simplicity; the limb is flexed and suspended by a sling from a horizontal bar above the bed. In the ambulatory treatment of gunshot fractures of the humerus, Blake has devised an ingenious dressing which furnishes continuous elastic traction on the lower fragment and permits easy access to the wound. The essentials of the apparatus consist of a metal frame, a cord and pulley and a section of the inner tube of an automobile tire.

Wounds of the Head.—In trench fighting, wounds of the skull and brain are numerous. Of the latter a small proportion only come under treatment. Infected compound fractures of the skull are many, and if the dura is opened the outlook is serious. Among 80 cases of wounds of the brain treated in hospitals by Lapointe (*Jour. de Chir.*, Aug., 1915), the mortality was 58.75 per cent., due to infection. Among those who survive wounds of the brain, sequelæ are common and some permanent disability, often of a serious character, is the rule.

Wounds of the Chest.—Wounds of the chest constitute about ten per cent. of the cases collected in the ambulances, but a third of those wounded in the chest lie dead on the field (Laurent). In serious cases, hemothorax is the commonest complication. Pleurisy is frequent, but empyema is exceptional.

Wounds of the Heart and Blood Vessels.—Wounds of the heart and largest vessels scarcely come under treatment. Operative interference in the field would not be justifiable. Beaussanat (*Bull. Acad. Med.*, 1915, p. 554), however, successfully removed a shell fragment from the right ventricle of the heart four months after the injury. Wounds of blood vessels are said to cause death in 30 per cent. of those who die on the field. Arterial hematoma (traumatic aneurism) and arteriovenous aneurism is observed. Haberer (*Wien. Klin. Woch.*, 1915, 435-471) treated 42 cases of aneurism; suture was preferred to ligation when practicable. He made 29 ligations, two amputations, and 13 sutures, all successful.

Wounds of the Nerves.—Wounds of nerves are moderately frequent. Cassirer (*Deutsch. Med. Woch.*, 1915, 520) treated 240 cases and operated upon 60. In 25 per cent. of these the nerve was divided. No ultimate results are given. Noehte (*Deutsch. Med. Woch.*, Jan. 1, 1915) reports 20 cases with injuries to the spinal cord, of which nine were operated upon. Of 11 not operated upon, nine died from complications. Of the nine operated upon, two improved. One improved after opening an abscess; one showed improvement, except for motor symptoms.

Wounds of the Abdominal Viscera.—Wounds of the abdominal viscera are rarely operated upon in field hospitals and are not seen as recent wounds in base hospitals. Counting deaths on the battlefields the percentage of wounds of the abdomen is about 14. While surgeons are agreed that, given the equipment and surroundings of a good hospital, the sooner gunshot and other serious abdominal injuries are operated upon the better, yet there are many who believe that under the conditions of the modern battlefield those wounded in the abdomen do better if simply dressed, kept absolutely quiet without food or drink, and let alone. All are ready to admit that large wounds of the abdominal wall, wounds with prolapse of the viscera, and a few others of special character demand interference; but experience in recent wars has demonstrated, first, that many men wounded in the abdomen have been left on battlefields some times for days without food or water and have recovered, and second, that

in the Boer War and the Russo-Japanese War operations for abdominal wounds were almost uniformly fatal. A very real objection to immediate operation on the field is that these operations require for their successful performance not only a rather elaborate equipment but also a high degree of skill on the part of the operator and a highly trained staff of assistants.

It has been proposed, and carried out in a small number of cases, to make a small incision (Murphy) above the pubes and to insert a strand of gauze for drainage of the pelvis and for the relief of intra-abdominal tension. The results of this method, which is advocated in France by Ferraton, are believed to be beneficial. A majority of the surgeons, however, are in favor of expectant treatment in these cases, a dressing, absolute quiet, nothing by the mouth, and morphine. Kelling (*Centralblatt f. Chir.*, xliii, 241) recommends the application of a compression binder over the first-aid dressing, in order to prevent or localize escape of intestinal contents and check bleeding. Experiments on rabbits substantiated the value of this method.

On the other hand, a few surgeons favor interference. Thus, Quénu (*Bull. et Mem. Soc. de Chir. de Paris*, 1915, 1257) discusses the report of Bouvier and Chaudrelier, who operated on 33 cases of abdominal wounds, in fact, on all the cases coming under their care. Their deaths were 18, and recoveries 15, a mortality of 54.5 per cent, probably as good results as could have been obtained under any circumstances. In wounds of the small intestine, they had 66 per cent. mortality; of the large intestine, 40 per cent. Deaths from shock did not occur. The intestinal wounds were sutured or in some cases resection with end-to-end union was made. Bouvier and Chaudrelier operated under exceptional conditions since their patients had to be transported only a few metres (*sic*). Quénu compares these results with those of Sencert, who did not operate on his abdominal cases and who had only 13 recoveries in 58 cases, a mortality of 77.5 per cent. Quénu considers this a strong argument in favor of interference.

Treatment of Infections.—The use of vaccines and sera in the treatment of infected wounds has been rather general, but accurate reports as to results are wanting. In the treatment of gasogenic infection (*B. aerogenes capsulatus*, *B. œdematis maligni*, and *B. perfringens*) the injection of hydrogen peroxide, of oxygen gas, or of a solution of quinine into the tissues at and proximal to the advancing border of infiltration together with multiple incisions has been followed by good results in many cases. When these infections are associated with extensive compound fractures, and more especially with wounds of large vessels, amputation must usually be done.

To disinfect the skin and soiled wound surfaces no better application has been devised than tincture of iodine. Infected wounds are being treated in a variety of ways, by irrigation, with weak iodine solution, hydrogen peroxide, salt solution, and others. Some English surgeons cling to carbolic-acid combinations. The writer has not heard of the general use of Chlumski's solution of carbolic acid, glycerine, and alcohol in the treatment of foul wounds, though it has been regarded highly in this country for years. Cheyne, Basset-Smith and Edmunds (*Jour. Royal Naval Service*) recommend the following treatment for gunshot wounds: powder the wound surface with equal parts of boric and salicylic acid and inject into the depths of the wound a paste containing creosol, 20 per cent., in a basis of lanolin and white wax. In cases of gas-gangrene and other foul wounds, Morestin uses equal parts of formalin, alcohol and glycerine. A new antiseptic devised by Dakin and Carrel is prepared as follows: 200 gm. of chlorinated lime is added to ten litres of water in which 140 gm. of anhydrous sodium carbonate has been dissolved; the mixture is thoroughly shaken and after half an hour the supernatant fluid is separated by siphoning from the precipitate of calcium carbonate and filtered through cotton; the clear fluid thus obtained is made neutral or acid by the addition of boric acid until

a drop of the solution does not redden a few drops of phenolphthalein solution, about 25 to 40 gm. of the boric acid usually being required. It is reported that this solution may be used with advantage as a continuous irrigation of foul wounds. Its bactericidal action is said to be good and it is said to hasten the separation of sloughs.

Tetanus.—As a prophylactic against and in the treatment of tetanus, antitoxin has been valuable. Bazy saw 129 cases of tetanus among 10,399 wounded; of these 90 died. When antitoxin was given in all cases, the mortality was only one-third as great as when given only in suspicious cases. Nicoll (*Jour. Am. Med. Ass.*, lxiv, 1952) advises the following method of treatment in tetanus cases: first, the intra-spinal injection of from 3,000 to 5,000 units into the lumbar region of the spinal canal, preferably under an anesthetic, the volume of fluid injected being brought up to 10 or 15 c.c. by the addition of sterile normal salt solution, and the exact amount being regulated according to the age of the patient and the amount of spinal fluid withdrawn; second, intravenous injection of 10,000 units at the same time; third, the repetition of the intra-spinal dose in 24 hours; fourth, a subcutaneous injection of 10,000 units, three or four days later; along with quiet, sedatives, etc. Nicoll reports 20 cases with 16 recoveries, a very remarkable record. Zinsser (*Berlin. klin. Woch.*, lii, 689) states that magnesium glycero-phosphate is as effectual as magnesium sulphate in the treatment of tetanus and less toxic. He gave it in doses of 10 c.c. of a 25 per cent. solution every three or four hours in moderately severe cases. This dosage controlled convulsions and the patient was kept almost entirely free from pain.

Poisoning by Noxious Gases.—Glenny and McNee (*British Med. Jour.*, July, 1915) studied 685 cases of poisoning by noxious gases in Flanders. One hundred and twenty were in a serious condition when seen, 33 of which died. Acute congestion and edema of the lungs were found at autopsy. The symptoms in bad cases were: cyanosis, intense dyspnea, cough, rapid respiration, subnormal temperature, collapse, death from asphyxiation. Those who survived the earlier stages developed after some hours an intense bronchitis with thick green mucopurulent expectoration, fever, delirium, rapid heart. Some of these latter cases were fatal. All the fatal cases died before the fifth day. Of those who survived, all suffered from intense irritation of the respiratory tract.

Disinfection of the Skin.—McDonald (*Surg., Gyn. and Obs.*, xxi, 82) recommends the following solution for cleansing hands and disinfecting the skin of patients prior to operation: acetone (commercial) 40 parts, denatured alcohol 60 parts, and pyxol two parts, the last being the germicide. The method of treating the hands is as follows: immerse hands in the solution, scrub into hands with nail brush and rub into arms with gauze; scrub one minute. Advantages alleged for the method are that it is not expensive, and that it contains a fat-solvent (acetone), causing penetration. The germicidal action is powerful. In preparing the skin of patients, as of the abdomen, the solution is rubbed in for two minutes without previous washing. Good results are reported by McDonald, McMullin and Stanton. McDonald dispenses with rubber gloves.

Fractures.—In a report of a committee appointed by the American Surgical Association on the treatment of fractures, Huntington (*Ann. of Surgery*, Sept., 1915) draws the following conclusions: (1) The public demands and is entitled to better results from fracture treatment than have hitherto been obtained. (2) From 80 to 90 per cent. of long-bone fractures can be successfully treated by the closed method. (3) Conservative treatment exacts a high degree of skill and attention to detail. (4) Resort to the open method is of too frequent occurrence. (5) The least possible amount of foreign fixation material should be used. (6) Steel plates in the treatment of fractures are a menace from the standpoint of permanency. (7) The bone implant is the fixation material of choice. (8) Intra-medullary splints are inferior to the autogenous bone im-

plant. (9) Fixation material of whatever type is not to be relied upon for maintenance of alignment. (10) Cases of non-union and faulty union which come to secondary operation indicate indifferent primary methods of treatment. (11) Operative treatment of compound fractures should be withheld until the external wound healing is perfected. (12) Many joint fractures can be treated successfully only by the open method. (13) Normal contour and good function are chiefly related in end results of all fractures.

Albee (*Ann. of Surgery,* lxiii) recommends the use of an autogenous bone peg in the treatment of certain fractures of the neck of the femur. The value of the bone graft in bone surgery is becoming better appreciated by surgeons and when applicable is to be preferred to the use of any foreign body.

The Cancer Problem.—The essential cause of cancer remains unknown. Indeed, eminent authorities raise the question: Is cancer to be regarded as an entity, a single disease? May it not be merely a manner of growth in which cell multiplication goes on at the expense of cell development, that is, the cells of malignant tumors never reach the highest stage of development of their respective types? A vast proportion of cancers appear to be brought on by purely extraneous causes, by an impulse from without acting in some mysterious way to disorder the normal development of tissues. The variety of cancers is almost endless. Even in the same tumor, the cell types and their arrangement may vary greatly in different portions of the same growth. One thing is certain, trauma, whether it be a single blow or oft-repeated insults, mechanical, thermal, chemical or other, precedes the development of cancer in a very large proportion of cases, and cancer most often occurs in parts of the body most exposed to chronic irritation. This relationship has long been known, that certain occupations and certain habits give rise to cancers of special types in special regions of the body. The vital processes of the tissue cells are more easily upset in some individuals than in others. In certain families cancer tends to appear in successive generations in the same places at the same period of life. Cancer is relatively rare in the young, and is very common in middle and advanced life. One of the most important facts which ought to be impressed upon the public is that, contrary to a widespread idea, cancer is not a constitutional disease in its early stages. Every form of cancer is at first local and can be positively cured by operative removal if taken in time. These facts, often reiterated, are not fully understood by the laity and even in the medical profession their practical significance is not always borne in mind. Medical men often delay sending their cancer patients to the surgeon until the favorable time for operation is passed. The treatment of cancers is operative. Not one of the thousand cancer cures that enjoy from time to time a brief and unmerited popularity is of the slightest value. It is true that the X-rays and radioactive substances may improve and even cure some of the less malignant forms of superficial cancer, but their action is rather uncertain, they often fail, and must be regarded, at best, as adjuvants merely to the surgeon's knife.

Robert Abbe, in a series of articles published during the year, relates the histories of several cases of uterine fibroma treated by radium. Cessation of bleeding occurred and the tumors slowly diminished in size. He relates also the histories of keratoses and early epitheliomata on the hands of X-ray workers cured by radium; also of lymphangiomata and hemangiomata and myelomata of bone cured by radium in a wonderful way. He states specifically his opinion, however, that the more malignant and rapidly growing forms of cancer are not at present cured by radium.

W. J. Mayo (*Surg., Gyn. and Obs.,* lxv, 13) discusses the most modern treatment of gastric ulcer with the technique of the various operations therefor, and points out the advantages of destroying the ulcer with the cautery in certain cases, more especially the overhanging edges of the ulcerated area, since it is here that cancer is prone to develop. He also shows that gastro-jejunostomy is ad-

vantageous in some cases, though the pylorus is not obstructed.

Torek (*Ann. of Surgery*, April, 1915) presents a paper on "Cancer of the Esophagus," together with a description of his operation on the intra-thoracic esophagus and the history of his successful case.

Abdominal Surgery.—C. H. Mayo (*Ann. of Sugery*, Aug., 1915) points out that papillomata of the gall bladder demand cholecystectomy and are not cured by mere draining. The majority of surgeons at present seem to favor removal of the gall bladder almost as a routine procedure. In the hands of highly skilled surgeons the operation is indeed to be preferred under a good many conditions. The mortality is, however, distinctly greater than after drainage; the operation is more difficult and may be very difficult, and in the hands of all but highly proficient operators it is notably more dangerous.

The meeting of the American Surgical Association at Rochester, Minn., in June considered two topics chiefly, fractures and the surgery of the spleen, and W. J. Mayo (*ibid.*) describes the modern technique of splenectomy.

Crouse (*ibid.*, Oct., 1915, 451) recommends an approach to the kidney through the triangle of Petit, on the grounds of rapidity and that it permits a return to normal anatomical conditions at the close of the operation.

Gibbon (*ibid.*, Oct., 1915) reports the results of operations for typhoid perforation of the intestine in 112 cases with a general percentage of recovery of 24.1. In 1914-1915 ten cases were operated upon with a mortality of 50 per cent.

Minor Developments.—Peck (*ibid.*, Aug., 1915) describes a method of splinting the ureter with a ureteral catheter in cases of mechanical obstruction from kinking without calculus. He has used it in 14 cases with good results.

Gallie (*ibid.*, Oct., 1915, 481) describes a method of tendon-fixation in bones, especially in cases of infantile paralysis, and reports 100 cases with gratifying results.

Moschowitz (*ibid.*, April, 1915) has a paper on the "Pathogenesis of Umbilical Hernia" with a new and original explanation of its causation. Horsley (*ibid.*, 1915) describes the technique of a new method for the lateral anastomosis of blood vessels.

Ashhurst (*ibid.*, Aug., 1915) describes a technique for the removal of the tongue which contains some original features.

PUBLIC HEALTH AND HYGIENE

Selskar M. Gunn

Failures in American Public Health.—The American Public Health Association held its forty-third annual meeting at Rochester, N. Y., Sept. 7-10. The New York State Department of Health called its annual Conference of Health Officers at the same time and place, and the result was the bringing together of about 2,000 health workers in the largest public-health conference ever held in the United States and the most important since the International Congress on Hygiene and Demography at Washington in 1912.

The most striking feature of the meeting was the presidential address of Prof. Wm. T. Sedgwick, which has been the subject of considerable comment in the scientific and lay press. After pointing out a number of achievements of public-health work in America, Professor Sedgwick proceeded to consider a number of its outstanding failures. Prominent among the failures referred to is the matter of sewage disposal. American cities go to great expense in securing an adequate supply of pure water for domestic and sanitary purposes but these same municipalities discharge their untreated sewage and other dangerous and unsightly wastes into streams and other watercourses without regard for their potential menace to the health of either the local population or others who may be dependent upon such watercourses for their supply. The provision of public comfort stations is another point which Professor Sedgwick holds to have been sadly neglected in Amer-

ican cities. He declares that there is a great deal too much typhoid in America and he maintains that our infant mortality rate is too high. For this latter condition the lack of proper supervision of milk is assigned as a cause. Professor Sedgwick asserts that the only safe milk is cooked milk and that all milk used for infants should be pasteurized in the final container. The high incidence of such conditions of imperfect health as blindness, tuberculosis, cancer and venereal diseases are pointed out as public-health failures, and personal hygiene is stated to be little understood and less practiced. Professor Sedgwick insists that we should have our children instructed in hygiene by teachers who understand it, instead of by persons who are totally unprepared to teach it, as is the case in many of our schools.

Voluntary Public Health Organizations.—A meeting of the Central Committee on Voluntary Public Health Organizations was held in Rochester, N. Y., in September, at the time of the meeting of the American Public Health Association. The secretary presented a report of the voluntary survey made by the committee of organizations interested in public-health work. This report is the outgrowth of a movement towards the correlation of health organizations, initiated in 1912 at a meeting of the Council on Health and Public Instruction of the American Medical Association and developed in this Central Committee, which was appointed at a meeting of these various organizations held in New York in April, 1913 (*A. Y. B.*, 1913, p. 743). The report includes a list of 45 organizations to which questionnaires were sent and an analysis of the replies of the organizations which answered the questionnaire, together with the names of their officers and a statement of the financial expenditures of some 15 of the leading ones. As a brief survey of the agencies operating in this field of public-welfare endeavor, this pamphlet, which is published by the American Medical Association, is unique.

Coöperation in Public Health in Small Communities.—A further step towards the extension of coöperation in public-health work among small communities (*A. Y. B.*, 1914, p. 706) was accomplished during the year by the enactment in New York of a law which authorizes two or more communities to employ a single full-time health officer, instead of each appointing a separate health officer giving part time only and receiving merely the minimum compensation of ten cents per capita with a limit of $800 per year. This statute was the outgrowth of an effort to secure the passage of a law providing for the abolition of the present coroners and local health officers and substituting therefor a full-time county health officer. The health question has been prominent recently in New York State and the growing interest of the public in the modern, broad-minded, intelligent type of health administration which has been given the state during the last year or two was demonstrated by the manner in which the press and the people of the state generally supported the Department of Health against the efforts of a group of politicians to take the Department out of the hands of its present non-partizan officials and to deliver it into political control.

Reorganization of State Health Departments.—The year saw the reorganization of the health departments of several states. In Massachusetts the law passed in 1914 was put into full effect by the appointment of a commissioner and the completion of the organization of the Public Health Council. It is significant that the new commissioner was appointed from the U. S. Public Health Service and was not a citizen of Massachusetts prior to his appointment. In New Jersey the state health department was reorganized and a State Director of Public Health was appointed in place of the former board. In West Virginia the former board was abolished and a commissioner and Public Health Council established in its place. In all the states where changes have been made they have been in this same general direction. The practical effect of the change from a board to a commissioner is to concentrate responsibility in one individual appointed for a definite term with sufficient power to enable him

to accomplish tangible results. He is generally appointed by the executive of the state and removable by the same authority after a hearing for cause shown. The typical public-health council is an advisory and legislative body with power to make regulations in the nature of a sanitary code and the duty to recommend to the legislature scientifically practicable health legislation. It is usually without administrative or executive duties.

Qualifications for Health Officers in New York State.—Under the provisions of a regulation adopted by the New York Public Health Council, health officers appointed after Nov. 1, 1916, will be required to have special qualifications for their work in addition to being physicians. The requirements adopted are as follows:

(1) They shall be graduates of medicine of not less than three years' standing;
(2) They shall when appointed be not less than 24 nor more than 65 years of age;
(3) They shall have complied with one of the following requirements:
(*a*) They shall have taken a correspondence course of at least one year with at least one week of practical demonstrations in laboratory and field work, both correspondence course and demonstrations to be approved by the Public Health Council, with examinations and a certificate; or
(*b*) They shall have taken a course in public health of at least six weeks, including practical laboratory and field work with lectures and reading at an educational institution, such course to be approved by the Public Health Council, with examinations and a certificate; or
(*c*) They shall have submitted evidence, satisfactory to the Public Health Council, of special training or practical experience in public-health work, with examination if required by the Council.

These regulations further provide, that under special conditions specified in writing by the local board of health or other appointing power or by the health officers, any of these qualifications may be waived by the Public Health Council. (See also *Medicine, supra.*)

Dismissal of Health Officers.—The health law of New York State which gives the commissioner of the Department of Health the power to dismiss any local health officer from his position for cause shown and after a hearing, was applied during the year by Commissioner Biggs in the removal of two health officers. This law is a powerful instrument for securing effective local health administration. A state health department executive possessing it is not only an advisory official but is able to exercise an active supervisory control over local health matters in all parts of the state. The incident marks an important step towards the establishment of greater efficiency in public-health work.

Health Conditions in the Army.—The report of the Surgeon-General of the U. S. Army covering the calendar year 1913, rendered early in 1915 (these being the latest figures available), showed a non-effective disease rate of 23.97 per thousand. This is the lowest non-effective rate ever reported for the Army. The Army death rate was 2.57, or a total of 397 deaths. Among the principal causes were the following: tuberculosis, 40; pneumonia, 23; kidney and bladder diseases, 17; organic heart disease, 15. No more striking evidence of the value of anti-typhoid inoculation can be presented than the rarity of that disease in the U. S. Army. It was reported at the end of 1914 that not a single case of typhoid had occurred among the large number of enlisted men in the concentration camps along the Mexican border. During 1915 Gen. W. C. Gorgas, having finished his great work of sanitation in the Panama Canal Zone and his lesser services to the Union of South Africa (*A. Y. B.*, 1914, p. 301) returned to the United States and assumed his duties as Surgeon-General of the Army.

Lung Diseases in the Navy.—Surgeon-General Braisted of the U. S. Navy states in his annual report issued during the fall of 1915 that because of the living conditions on battleships, which apparently cannot be corrected without impairing the fighting efficiency of the vessels, tuberculosis and pneumonia were the cause of many deaths in the Navy in the course of the year. In spite of the military activities of both sailors and marines while on duty at Vera Cruz, it was found that the number

of deaths from casualties in active service was less than half the number of deaths from these two diseases. Surgeon-General Braisted lays the responsibility for this high death rate from pulmonary diseases to the fact that "in the crowded condition necessary to manning and equipping vessels of war, hygienic primal principles, such as are accepted as indispensable in life ashore, practically never achieve recognition." The report goes on to state that "overcrowding, extreme reduction of the amount of air space per person, improper proportion of moisture, and inappropriate placing of air inlets and exits are all faults and problems incident to the packing of a thousand men in quarters which theoretically should hold but three hundred." In spite of the fact that these conditions do exist, the report praises the naval constructors for doing as well as they have under pressure of the requirements of "military necessity." It is stated further that real improvements cannot be looked for since the cruising and fighting efficiency of the vessels must always be the first consideration in the construction of naval vessels.

Among some of the other common communicable diseases not included in the respiratory group there has been a decrease in the Navy. This is true of typhoid, measles, mumps and diphtheria. Three years ago there were over two hundred cases of typhoid and several deaths; in 1915 there were only 13 cases and no deaths.

Health Conditions among Industrial Workers.—The Commission on Industrial Relations rendered its report in August. Section XVI of the report, dealing with the public-health side of the industrial question, is based on the investigations of Dr. B. S. Warren of the U. S. Public Health Service. Among some of the important conclusions stated in this report so far as it concerns the subject of public health are that (1) the wage loss in the United States on account of sickness is over $500,000,000 per year and the average medical expenses of the thirty million wage earners on whom this loss falls is $180,000,000 per year; (2) that 30 or 40 per cent. of cases requiring charitable relief are immediately due to sickness; and (3) that sickness among wage-earners is due primarily to poverty. Working environment and the worker's personal hygiene are stated in the report to be of secondary importance.

The report goes so far as to say that workers are financially unable to maintain proper living conditions, thus predisposing to sickness and "sickness is most prevalent among those who are least able to purchase health." The Commission reports in favor of a government system of sickness insurance. (See also, XVI *Labor.*)

Sanitation in Rural Schools.—The joint committee of the council of education of the National Educational Association and the council on health and public instruction of the American Medical Association, which was appointed in 1911, has reported that according to its unanimous opinion the most neglected and probably the most important field in school hygiene is the problem of rural-school sanitation. On account of the non-existence of compiled information upon which to base recommendations for remedying this situation, the joint committee employed a field secretary to make a survey, which covered about 100 rural schools in four eastern states. This and other material, secured principally from state boards of health, has been put into the form of a bulletin of the U. S. Bureau of Education (Bull. 12, "Rural Schoolhouses and Grounds"). On the basis of this report the joint committee issued a briefer pamphlet giving its conclusions as to what constitute the minimum requirements for rural schools. This report furnishes a standard which is easily applied and is within the economic possibility of any community. It deserves the attention of educators, health officials and the general public and should mark the beginning of a very definite improvement in the condition of rural schools in respect to sanitary and general health conditions.

Epidemics of Smallpox.—In January there were 100 cases of smallpox in Columbus, O. This epidemic, however, was so mild that many cases went unrecognized, thus making the situation

a particularly difficult one to control. A sufficiently drastic control, such, for example, as was exercised by Commissioner Biggs of the New York State Department of Health at Niagara Falls early in 1914, would, if persisted in, correct the situation in a few months and leave the city practically clear of the disease. Outbreaks of old-time virulent smallpox were reported from Laredo, Tex., and from New Bedford, Mass. In the former community 208 cases with 32 deaths were reported, and in the latter 23 cases with 10 deaths.

Plague Extermination in New Orleans.—The plague, which has been the cause of a great deal of effort on the part of the U. S. Public Health service at New Orleans (*A. Y. B.* 1914, p. 707), recurred in the late summer of 1915. The latest human case was confirmed as plague on Sept. 8. This case did not mark the beginning of any epidemic, and no later cases have been reported. The fact that this case occurred in spite of the vigilance of both local and Federal authorities demonstrates the necessity for maintaining a most careful watch over this situation. The success with which the disease has been controlled, in spite of the fact that plague-infected rats are still found from time to time, is an excellent tribute to the efficiency of the Service in plague prevention. The methods employed in this work include the fumigation of vessels with carbon-monoxide or hydrocyanic gas, intensive trapping, rat-proofing of buildings, spraying of premises with pulecides, fumigation of premises with hydrocyanic gas, and education of the public. Since the plague-extermination work in New Orleans was commenced, 94,307 buildings have been rat-proofed and 490,022 rats have been trapped. Of this number 298,607 were examined and rodent plague was found in 265 cases. This covers the work done up to Nov. 6, 1915. The last case of rodent plague reported up to this time was discovered on Nov. 4.

Pellagra.—In 1914 Surgeon Goldberger of the U. S. Public Health Service announced his conclusion, upon the basis of observation on the diet at certain institutions, that pellagra is due to imperfect diet (*A. Y. B.*, 1914, p. 708). Studies have been continued along this line during 1915 by Goldberger, Waring, and Willets, and the results are confirmatory of the earlier conclusions. The results of these later studies appeared in *Public Health Reports* for Oct. 22, wherein the following recommendations are made:

1. An increase in the diet of fresh animal and leguminous foods, particularly during the late winter and spring.
   - *a.* Ownership of a milk cow and increase in milk production for home consumption.
   - *b.* Poultry and egg raising for home consumption.
   - *c.* Stock raising.
   - *d.* Diversification and the cultivation of food crops (including an adequate pea patch) in order to minimize the disastrous economic effects of a crop failure and to make food cheaper and more readily available.
   - *e.* Making these foods as accessible as possible in the more or less isolated industrial communities by providing markets, particularly butcher shops, throughout the year.
2. A reduction in the diet of the carbohydrate (starchy) foods.
   - *a.* Improve economic conditions; increase wages, reduce unemployment.
   - *b.* Make the other class of foods cheap and readily accessible.

These conclusions were the result of experiments made in certain institutions, including two orphanages at Jackson, Miss., and the Georgia State Asylum, directed towards the prevention or cure of pellagra among the inmates by a regulation of the diet along the lines suggested. A few weeks later Goldberger and his coworkers announced the results of an experiment at the Mississippi State Penitentiary Farm, in which pellagra was produced in healthy white adult males by a restricted one-sided, mainly cereal diet. Twelve convicts out of about 70 or 80 who were quartered on the prison farm, accepted the offer of a pardon made by Governor Brewer and permitted themselves to be subjected to the experiment. After a preliminary observation during which no evidence of pellagra was detected in the men under observation, the diet was changed on April 19. In the middle of September, about five

months after the beginning of the restricted diet, the dermatitis or skin eruptions, characteristic early symptoms of the disease, were noted and pellagra was shown to have been caused in six of eleven volunteers, one having been withdrawn for another cause before the experiment was concluded.

Typhus Fever.—The year has seen the recurrence on a large scale of typhus fever, a disease which has been thought by many to be nearly extinct. Typhus fever or Brill's disease has been noted but rarely of recent years. Occasionally the quarantine stations at the ports of entry of the United States have detected a mild case, and it was to these mild cases that the name Brill's disease, which is endemic in New York City, was given, before the identity of this infection and typhus fever was thoroughly established (*A. Y. B.*, 1914, pp. 691, 695). Early in the year the disease was recognized in many of the European armies in the field and in Serbia the disease assumed the character of a national epidemic. The disease has thus appeared from time to time in Europe during or immediately following war, and it has been known by various names, such as camp fever, siege fever, and jail fever. "After the war, the pestilence," is an old phrase for which typhus is responsible. It is now known, however, that typhus is spread by the louse, which, of course, finds ideal conditions for growth and transmission in trench life, where hosts of unwashed men are in close contact for long periods of time so that the avoidance of vermin is practically impossible. It is also known that this hitherto baffling disease may be successfully combated by the adequate use of insecticides and by cleanly habits, frequent bathing and frequent changes of clothing. Further, Plotz and his co-workers at the Mt. Sinai Hospital, New York, have discovered the specific bacillus of typhus and have announced the perfection of an anti-typhus serum.

It has been given to American sanitarians to conduct the most important work ever undertaken in checking and controlling typhus. In the spring of 1915 a party of American Red Cross physicians, nurses and sanitary experts went to Serbia under the leadership of Dr. F. R. Strong of the Harvard Medical School. Dr. Strong and a number of the party returned late in the fall after having established a system of hospitals and camps by means of which the disease was checked in its ravages. Some of the men remained in Serbia after the Bulgarian invading army arrived in November. (See also *Pathology and Bacteriology*, and *Medicine, supra.*)

Foot-and-Mouth Disease.—An epidemic of foot-and-mouth disease in cattle, discovered in October, 1914, and continuing, although under control, through a part of 1915 (see XVII, *Live Stock*), has compelled the attention of public-health authorities having to do with milk supplies. Here and there a case of human infection with this disease has been reported, but these cases have been so rare and so scattered that the foot-and-mouth disease has remained a question for the attention for the departments of agriculture rather than becoming a public-health problem. It has been thought by some authorities that the incidence of this disease in man is greater than is generally believed, for the reason that mild infections, occurring for the most part among farm-workers, are not seen by a physician and hence not reported. In some instances these light cases are perhaps unrecognized by the patient himself. It is probable that infection with foot-and-mouth disease can occur by contact of skin abrasions with the saliva or the vesicles of infected animals, but the commonly credited means by which the disease is transmitted to man is through raw (unpasteurized) milk, butter, cheese or other dairy products. In April a bulletin dealing with this subject was issued by the U. S. Department of Agriculture, which furnishes the assurance that adequate pasteurization will render milk safe as regards foot-and-mouth disease.

Venereal Diseases.—In the spring the Vermont legislature passed an act making the marriage of a person knowing himself to be infected with gonorrhea or syphilis a crime punishable by fine or imprisonment. The same act also makes it a similar offense for a person infected with either

of these diseases to have sexual intercourse. The most drastic feature of the act in practical application is that provision of it which requires physicians to report cases of gonorrhea or syphilis coming to their knowledge to the State Board of Health, giving the name, age, address and sex of the person infected. It is provided that the State Board of Health shall not disclose the names and addresses of such persons, except to a prosecuting officer or in court in prosecutions under the act.

To the city of Buffalo belongs the distinction of having instituted, during the year, the first municipal venereal-disease hospital. In this hospital are treated cases of kidney and bladder diseases and the usual venereal infections. An out-patient department is maintained and facilities are provided for administering salvarsan treatment in cases of syphilis. (See also XV, *Social and Mental Hygiene.*)

The Mosquito Pest.—The summer of 1915 was unusually wet throughout a very large part of the United States and the number of mosquitoes was correspondingly great. This condition was reflected in the incidence of malaria in communities ordinarily free from it. The unusual demand for quinine already created by reason of the war, coupled with this added need in the United States, sent the price soaring. In some northern communities the great abundance of mosquitoes and the presence of malaria infection created a condition of epidemic. The freedom from this unpleasant and dangerous experience enjoyed by communities where breeding places had been abolished and the success in controlling malarial conditions which attended the abolition of breeding places add another chapter to the list of brilliant experiments along this line which have been announced within the last few years.

The conclusions of sanitarians who have carefully studied this problem are more and more uniformly to the effect that the use of oil on the surface of water in which mosquitoes breed is bound to be unsatisfactory on account of the temporary character of the protection secured and the almost certain danger that the follow-up work will be incomplete. The oil method, moreover, is in the nature of a treatment for an already existing danger, whereas what is needed is prevention. This can be accomplished only by the destruction of the breeding places. During the year the *Journal of the American Medical Association* published the conclusions of Dr. A. H. Doty, former health officer of the port of New York, upon this subject.

Healthy Summer Resorts.—It has been stated in many public-health addresses and papers that the time will come when the prospective summer resorter will look up the death-rate, the disease prevalence, and the nature of the water supply and sewage disposal of the places which he considers in determining where he will spend his vacation. York, Me., during the year anticipated this situation and employed a full-time health officer at a salary of $2,500 a year to look after its sanitary conditions. York has a winter population of about 2,500. This means that it is spending a higher per capita sum directly for public health than any other American municipality; New York is one of the leaders in this respect, the expenditure for public health in that city being about 70 cents per capita. The results of this sort of expenditure in preventing "vacation typhoid" and other diseases likely to be spread by and among a temporary population, especially under the conditions of poorly protected water supply and unsewered summer residences, should make it financially worth while to the community. If this effect is not immediately apparent, it surely will be in a few years, when the summer visitors learn that York is a "safe" summer home.

New York State Commission on Ventilation.—At the end of 1914 the New York State Commission on Ventilation (*A. Y. B.* 1913, p. 743) rendered a report of its first year's work, which was published in the *American Journal of Public Health* during the early months of 1915. The following is the Commission's summary of the report:

> The work of the Commission is still going on and no final opinions have been reached upon any points. The following tentative conclusions seem, however, to

be indicated by the experiments of the first year as outlined in the report:

(1) A very high room temperature such as 86° F. with 80 per cent. relative humidity produces slight but distinct elevation of body temperature, an increase in reclining heart rate, an increase in the excess of standing over reclining heart rate, a very slight lowering of systolic blood pressure, and a marked fall in the Crampton value.

(2) A moderately high room temperature, 75° with 50 per cent. relative humidity, has all the effects noted above, although of course in less degree than the extreme temperature condition.

(3) Even the extreme room temperature of 86° with 80 per cent. relative humidity shows no effect upon rate of respiration, dead space in the lungs, acidosis of the blood, dissociation of oxyhæmoglobin, respiratory quotient, rate of heat production, rate of digestion, carbohydrate or protein metabolism, concentration of the urine or skin sensitivity.

(4) The power to do either mental or physical work, measured by the quantity and quality of the product by subjects doing their utmost, is not at all diminished by a room temperature of 86° with 80 per cent. relative humidity.

(5) On the other hand the inclination to do physical work, and the inclination to do mental work are diminished by sufficiently high room temperatures. So far as physical work is concerned, our tests show a decrease in actual work performed, when the subject had a choice between working or not working, of 15 per cent. under the 75° condition and of 37 per cent. under the 86° condition, as compared in each case with 68°.

(6) Stagnant air at the same temperature as fresh air, even when it contains 20 or more parts of carbon dioxide per ten thousand and all the organic and other substances in the breathed air of occupied rooms, has, so far, shown no effect on any of the physiological responses listed above under (1) and (3) nor on the power or inclination to do physical or mental work nor on the sensations of comfort of the subjects breathing it.

(7) On the other hand, the appetite for food of subjects exposed to such conditions of stagnant air may be slightly reduced.

(8) These experiments seem to indicate that over-heated rooms are not only uncomfortable but produce well marked effects upon the heat regulating and circulatory systems of the body and materially reduce the inclination of occupants to do physical work. The most important effects of "bad air" are due to its high temperature, and the effects of even a slightly elevated room temperature such as 75° are sufficiently clear and important to warrant careful precautions against over-heating.

(9) The chemical changes in the breathed air of occupied rooms are of comparatively minor importance although the substances present in such air may exert a slight decrease in the appetite for food.

VITAL STATISTICS

Extension of the Registration Area.—The Bureau of the Census was unable to complete the report on mortality statistics for 1914 for publication during the year. Through the courtesy of the Bureau, however, we are able to present the main features of the bulletin in press at the end of the year.

The registration area for deaths is composed chiefly of those states in which the registration under state laws is sufficiently complete that transcripts are obtainable by the Bureau of the Census as the basis for the annual compilation of mortality statistics, but certain cities in non-registration states are also included, the registration of deaths in these cities being conducted under local ordinances. It will be seen in the table following that the registration area for deaths now embraces over two-thirds (66.8 per cent.) of the total population of continental United States, but only slightly over two-fifths (41.3 per cent.) of the land area of the country (2,973,890 sq. miles) is represented.

The state of Virginia was added to the registration area in 1913 (*A. Y. B.*, 1914, p. 712), and in 1914 the area was extended by the addition of the entire state of Kansas, all the important cities of which were already included (*A. Y. B.*, 1913, p. 746). At the end of 1914, the registration area comprised 25 states (in one of which, North Carolina, registration is restricted to municipalities which had 1,000 population or over in 1900), the District of Columbia, and 32 cities in non-registration states, among the latter several of the cities in Illinois. On Jan. 1, 1915, the "model law" for the registration of births and deaths went into operation in South Carolina, and the law was enacted during the year in Florida and Illinois.

The following table shows the growth of the registration area and the death rate therein of the United States up to the close of 1914:

REGISTRATION AREA FOR DEATHS

Year	Population of Continental United States	Registration Area for Deaths					
		Population		Land Area		Deaths from all Causes[1]	
		Number	Per Cent. of Total	Square Miles	Per Cent. of Total	Number	Rate per 1,000 Population
Census year 1879–1880	50,155,783	8,538,366	17.0	16,481	0 6	178,645	19.8
Census year 1889–1890	62,622,250	19,659,440	31.4	90,695	3.0	386,212	19.6
Census year 1899–1900	75,994,575	28,807,269	37.9	176,878	5.9	512,669	17.8
Calendar year 1900		30,765,618	40.5	212,621	7.1	539,939	17.6
Calendar year 1901	77,747,402	31,370,952	40.3	212,770	7.2	518,207	16.5
Calendar year 1902	79,365,396	32,029,815	40.4	212,762	7.2	508,640	15.9
Calendar year 1903	80,983,390	32,701,083	40.4	212,762	7.2	524,415	16.0
Calendar year 1904	82,601,384	33,345,163	40.4	212,744	7.2	551,354	16.5
Calendar year 1905	84,219,378	34,052,201	40.4	212,744	7.2	545,533	16.0
Calendar year 1906	85,837,372	41,983,419	48.9	603,066	20.3	658,105	15.7
Calendar year 1907	87,455,366	43,016,990	49.2	603,151	20.3	687,034	16.0
Calendar year 1908	89,073,360	46,789,913	52.5	725,117	24.4	691,574	14.8
Calendar year 1909	90,691,354	50,870,518	56.1	765,738	25.7	732,538	14.4
Calendar year 1910	92,309,348	53,843,896	58.3	997,978	33.6	805,412	15.0
Calendar year 1911	93,927,342	59,275,977	63.1	1,106,734	37.2	839,284	14.2
Calendar year 1912	95,545,336	60,427,247	63.2	1,106,777	37.2	838,251	13.9
Calendar year 1913	97,163,330	63,298,718	65.1	1,147,039	38.6	890,848	14.1
Calendar year 1914	98,781,324	65,989,295	66.8	1,228,644	41.3	898,059	13.6

[1] Exclusive of stillbirths.

Death Rates.—The death rate of the registration area for 1912 (13.9 per 1,000) was the lowest recorded up to that time. The rate in 1913 (14.1) was slightly higher than that of 1912 but lower than any rate previously recorded. In 1914 the rate fell to the new low record of 13.6. The Bureau of the Census comments upon this exceedingly favorable record as follows:

> The death rate for 1914 is 16 per cent. lower than the average for the five-year period 1901-1905. When due allowance is made for the addition of many new states to the registration area between 1905 and 1914, and the comparison is confined to the registration states as they existed during the period 1901-1905, there still is shown a decided decrease, amounting to 9.4 per cent. In other words, in a typical community in the registration area there were only 10 deaths in 1914 where there were 11 a decade earlier. In the original registration states as they existed in 1901-1905, the population of which is about one-fourth of the total for the United States, the reduction in the rate is equivalent to a saving of about 38,500 lives in 1914. On the assumption that a corresponding reduction in the rate had taken place throughout the entire country, the saving would amount to about 150,000 lives in 1914 for the United States as a whole. This furnishes a statistical measure of the contribution made to civilization by medical science and improved sanitation.

The annual crude death rates per 1,000 population, for all registration states and cities of 100,000 population or over, for the years 1906-10, 1913 and 1914, are given in the table on the following page. It must be remembered in comparing crude death rates that such figures are affected by peculiarities of the distribution of population. Color, race, sex, and age must be considered. An area having a large proportion of persons at the most healthful ages will normally show a lower general death rate than a population with larger proportions of very young children and of elderly persons. This caution is especially necessary in comparing the death rate for cities of 100,000 population. The rates shown for the large American cities are all low and without exception indicate a very favorable mortality. The high rates shown for Birmingham, Washington, Atlanta, New Orleans, Baltimore, and other cities of the South, are due to the large proportion of colored population, which under the conditions at present existing has practically always a much higher mortality than the white population. The low death rates shown for Seattle, Portland and certain other cities are dependent to

ANNUAL CRUDE DEATH RATES PER 1,000 PERSONS LIVING, 1906–14

Area	Death Rate from All Causes[1] per 1,000 Population		
	Annual Average 1906–10	1913	1914
Registration area	15.1	14.1	13.6
Registration states[2]	15.0	13.9	13.4
Urban districts[2]	16.3	15.0	14.5
Rural districts	13.4	12.7	12.3
Registration cities in other states	15.9	16.3	16.0
All registration cities[2]	16.2	15.2	14.7
Registration states:			
California	13.9	14.5	13.6
Colorado	14.3	11.5	11.2
Connecticut	15.6	15.0	15.1
Indiana	13.0	13.3	12.9
Kansas	[3]	[3]	9.8
Kentucky	[3]	13.1	12.9
Maine	16.2	15.3	15.6
Maryland	16.0	16.2	15.9
Massachusetts	16.1	15.0	14.7
Michigan	13.6	13.9	13.4
Minnesota	[4]	10.4	10.6
Missouri	[3]	12.4	12.3
Montana	[4]	12.0	11.2
New Hampshire	17.2	17.1	16.3
New Jersey	15.4	14.3	14.2
New York	16.4	15.0	14.7
North Carolina[5]	[4]	16.8	19.0
Ohio	[4]	13.8	13.0
Pennsylvania	15.5	14.6	13.9
Rhode Island	16.7	15.0	14.7
Utah	[4]	11.0	10.1
Vermont	16.1	15.8	15.0
Virginia	[3]	13.9	14.0
Washington	[4]	8.5	....
Wisconsin	[4]	11.5	11.1
Registration cities of 100,000 population or over in 1910.			
Birmingham, Ala.	[4]	17.4	17.5
Los Angeles, Cal.	14.8	15.0	12.9
Oakland, Cal.	15.4	12.5	11.6
San Francisco, Cal.	16.1	15.9	15.5
Denver, Colo.	17.5	13.7	13.2
Bridgeport, Conn.	15.5	14.9	15.0
New Haven, Conn.	17.3	15.9	16.1
Washington, D. C.	19.6	17.3	16.6
Atlanta, Ga.	19.4	17.4	16.5
Chicago, Ill.	14.9	15.1	14.2
Indianapolis, Ind.	15.2	15.7	15.9
Louisville, Ky.	17.4	16.2	16.5

Area	Death Rate from All Causes[1] per 1,000 Population		
	Annual Average 1906–10	1913	1914
Registration cities of 100,000 population or over in 1910—*continued*			
New Orleans, La.	21.7	19.9	20.5
Baltimore, Md.	19.5	18.5	18.1
Boston, Mass.	17.9	16.4	16.1
Cambridge, Mass.	15.1	13.5	13.2
Fall River, Mass.	19.7	17.2	17.3
Lowell, Mass.	19.4	15.9	15.9
Worcester, Mass.	17.1	16.4	15.7
Detroit, Mich.	14.8	17.3	15.6
Grand Rapids, Mich	13.3	13.3	12.9
Minneapolis, Minn.	11.0	11.6	12.0
St. Paul, Minn.	11.0	11.0	11.4
Kansas City, Mo.	14.6	14.8	14.0
St. Louis, Mo.	15.6	14.9	15.0
Omaha, Nebr.	13.8	13.9	13.8
Jersey City, N. J.	17.7	14.6	13.8
Newark, N. J.	17.2	14.4	14.5
Paterson, N. J.	15.7	13.5	13.5
Albany, N. Y.	18.6	19.8	19.4
Buffalo, N. Y.	16.0	15.8	15.5
New York, N. Y.	16.9	14.3	14.1
Bronx Borough	17.4	13.9	13.5
Brooklyn Borough	16.3	13.9	13.8
Manhattan Boro.	17.4	14.6	14.3
Queens Borough	14.9	13.8	14.4
Richmond Boro.	18.6	16.9	16.2
Rochester, N. Y.	14.7	14.6	14.3
Syracuse, N. Y.	15.2	15.7	14.8
Cincinnati, Ohio	18.1	16.9	16.0
Cleveland, Ohio	14.1	14.2	12.8
Columbus, Ohio	15.1	15.3	14.8
Dayton, Ohio	15.5	16.0	13.8
Toledo, Ohio	14.9	16.2	15.5
Portland, Ore.	10.3	9.5	9.1
Philadelphia, Pa.	17.7	15.7	16.1
Pittsburgh, Pa.	18.0	17.1	15.7
Scranton, Pa.	16.3	14.8	15.8
Providence, R. I.	17.6	15.2	15.2
Memphis, Tenn.	20.6	20.8	20.7
Nashville, Tenn.	19.3	17.8	18.4
Richmond, Va.	22.5	20.4	19.7
Seattle, Wash.	9.8	8.4	....
Spokane, Wash.	12.8	8.9	....
Milwaukee, Wis.	13.7	12.7	11.8

[1] Exclusive of stillbirths.
[2] Includes District of Columbia.
[3] Not admitted to registration area until a later date.
[4] Figures for deaths not available for the entire period, 1906–1910.
[5] Includes only municipalities having a population of 1,000 or over in 1900.

some extent on the favorable age distribution of the population. With the report for 1911, the Bureau of the Census began the publication of "corrected" or "standardized" death rates, which permit an approximately exact comparison of the mortality of different localities in the registration

area of the United States (*A. Y. B.*, 1913, p. 746).

Causes of Death.—The death rates for certain important causes of death per 100,000 population in the registration area of the United States from 1901 to 1914 are given in the above table, compiled from the report of the Bureau of the Census for the year 1914.

DEATH RATES PER 100,000 POPULATION FROM IMPORTANT CAUSES OF DEATH

Cause of Death	Annual Average, 1901 to 1905	Annual Average, 1906 to 1910	1911	1912	1913	1914
Typhoid Fever	32.0	25.6	21.0	16.5	17.9	15.4
Malaria	4.8	2.6	3.0	3.1	2.5	2.2
Smallpox	3.4	0.2	0.2	0.3	0.2	0.3
Measles	9.0	10.8	10.0	7.0	12.8	6.8
Scarlet Fever	11.0	10.6	8.8	6.7	8.7	6.6
Whooping cough	10.9	11.5	11.3	9.3	10.0	10.3
Diphtheria and croup	29.6	22.4	18.9	18.2	18.8	17.9
Influenza	19.9	16.4	15.7	10.3	12.2	9.1
Dysentery	8.6	6.5	5.2	4.4	5.1	4.6
Erysipelas	4.5	4.2	4.2	3.8	4.0	3.7
Rabies	0.1	0.2	0.1	0.1	0.2	0.1
Tetanus	3.5	2.7	2.3	2.2	2.2	2.1
Pellagra	[1]	0.2	1.1	1.1	1.6	2.3
Tuberculosis (all forms)	192.6	168.7	158.9	149.5	147.6	146.8
Tuberculosis of the lungs[2]	170.7	146.8	138.0	129.8	127.7	127.8
Tuberculous meningitis	8.9	9.1	8.8	8.4	8.6	8.2
Syphilis	4.1	5.4	6.4	6.5	7.2	7.9
Cancer and other malignant tumors	67.9	72.6	74.3	77.0	78.9	79.4
Diabetes	11.5	13.7	14.9	15.0	15.3	16.2
Leukemia	1.2	1.5	1.6	1.7	1.8	2.0
Alcoholism (acute or chronic)	6.1	5.8	4.9	5.3	5.9	4.9
Meningitis (total)	31.7	19.4	12.3	11.5	10.4	8.8
Acute anterior poliomyelitis (infantile paralysis)	[3]	[3]	1.8	1.9	1.4	1.1
Apoplexy	69.6	71.7	74.7	75.7	74.6	77.7
Paralysis without specified cause	20.1	16.1	10.7	10.1	10.7	9.7
Epilepsy	4.4	4.2	3.9	4.1	4.2	3.9
Diseases of the circulatory system (total)	161.2	177.7	185.3	190.3	185.9	187.8
Organic diseases of the heart	124.2	133.2	140.9	142.6	138.6	141.8
Diseases of the respiratory system (total)	220.5	188.1	168.1	165.8	164.3	157.7
Acute bronchitis	21.4	15.2	10.9	11.1	10.4	9.7
Chronic bronchitis	15.4	11.1	8.6	8.1	7.6	7.7
Bronchopneumonia	32.9	40.4	44.5	47.0	49.1	48.7
Pneumonia (total)	125.5	103.0	89.2	85.2	83.2	78.3
Pleurisy	4.6	4.1	3.6	3.3	3.5	3.7
Diseases of the digestive system (total)	195.2	193.2	166.3	158.2	163.2	151.0
Ulcer of the stomach	2.9	3.6	3.6	3.8	4.0	4.1
Diarrhea and enteritis (under 2 years)	89.0	96.2	77.4	70.3	75.2	66.0
Diarrhea and enteritis (over 2 years)	20.2	16.7	13.7	13.7	15.0	13.4
Appendicitis and typhlitis	11.0	11.2	11.6	11.6	12.1	12.3
Hernia, intestinal obstruction	13.0	12.9	11.9	11.9	11.6	11.7
Cirrhosis of the liver	14.4	14.3	14.0	13.5	13.4	12.9
Simple peritonitis (nonpuerperal)	10.8	6.1	4.0	3.2	2.7	2.8
Acute nephritis	9.6	10.1	10.0	10.6	10.4	9.0
Bright's disease	87.4	87.4	87.5	92.5	92.5	93.4
Puerperal septicemia	6.3	6.8	7.4	6.5	7.2	7.1
Suicide	13.9	16.0	16.2	16.0	15.8	16.6
Accident	84.9	86.0	84.6	82.4	85.3	78.5
Homicide	2.9	5.9	6.6	6.5	7.2	7.3

[1] Less than one-tenth of 1 per 100,000 population.
[2] Includes acute miliary tuberculosis.
[3] Not separately reported.

International Statistics.—In the following tables, taken from the latest *Annual Report* of the Registrar-General of England and Wales, are given birth and death rates per 1,000 persons living in the principal countries for which complete and accurate statistics are available:

ANNUAL CRUDE DEATH RATES IN PRINCIPAL COUNTRIES PER 1,000 PERSONS LIVING, 1881–1913

(Annual Report, Registrar-General of England and Wales, 1913)

Countries (arranged in order of rates in 1901–5)	Quinquennial Periods						Years			
	1881–1885	1886–1890	1891–1895	1896–1900	1901–1905	1906–1910	1910	1911	1912	1913
Russia (European)	35.4	33.2	35.8	31.9	30.9	....	....	....	....	....
Chili	26.9	35.2	32.6	28.8	30.2	31.3	31.0	31.1	29.7	....
Ceylon	....	25.1	28.3	27.0	26.7	30.8	27.3	34.8	32.4	28.4
Hungary	33.1	32.1	31.8	27.9	26.4	25.0	23.6	25.1	23.3	....
Spain	32.6	30.9	30.1	28.8	26.0	24.3	23.3	23.2	21.8	22.1
Roumania	26.2	28.7	31.0	27.4	25.5	26.0	24.8	25.3	22.9	25.9
Austria	30.1	28.9	27.9	25.6	24.2	22.3	21.2	21.9	20.5	....
Jamaica	....	23.5	22.0	22.1	22.6	24.4	23.1	22.1	25.1	21.7
Bulgaria	17.7	18.9	27.8	23.9	22.5	23.8	23.2	....	....	....
Servia	24.5	25.9	28.9	24.8	22.4	24.3	22.1	21.8	21.1	....
Italy	27.3	27.2	25.5	22.9	21.9	21.2	19.9	21.4	18.2	....
Japan	....	20.6	21.1	20.7	20.9	21.0	21.1	....	....	....
German Empire	25.3	24.4	23.3	21.2	19.9	17.5	16.2	17.3	15.6	....
France	22.2	22.0	22.3	20.7	19.6	19.2	17.8	19.6	17.5	17.7
Prussia	25.4	24.0	22.8	21.0	19.6	17.3	16.0	17.2	15.5	....
Finland	22.2	20.0	20.5	19.3	18.0	17.4	16.5	16.5	16.3	....
Ireland	18.0	17.9	18.5	18.1	17.6	17.3	17.1	16.5	16.5	17.1
Switzerland	21.3	20.4	19.8	18.1	17.5	16.0	15.1	15.8	14.1	....
Belgium	20.6	20.2	20.1	18.1	17.0	15.9	15.2	16.4	14.8	....
Scotland	19.6	18.8	19.0	18.0	17.0	16.1	15.3	15.1	15.3	15.5
England and Wales	19.4	18.9	18.7	17.7	16.0	14.7	13.5	14.6	13.3	13.7
The Netherlands	21.4	20.5	19.6	17.2	16.0	14.3	13.6	14.5	12.3	12.3
Sweden	17.5	16.4	16.6	16.1	15.5	14.3	14.0	13.8	14.2	13.6
Denmark	18.4	18.7	18.6	16.4	14.8	13.7	12.9	13.6	13.0	12.5
Norway	17.2	17.0	16.8	15.6	14.5	13.8	13.5	13.2	13.5	13.2
Ontario, Province of	11.4	11.0	10.6	11.6	13.0	14.0	13.9	12.6	12.4	12.7
Australian Commonwealth	15.7	14.8	13.3	12.7	11.7	10.7	10.4	10.7	11.2	10.8
New Zealand	10.9	9.9	10.1	9.6	9.9	9.7	9.7	9.4	8.9	9.5

ANNUAL BIRTH RATES IN PRINCIPAL COUNTRIES, PER 1,000 PERSONS LIVING, 1881–1913

(Annual Report, Registrar-General of England and Wales, 1913)

Countries (arranged in order of rates in 1901–5)	Quinquennial Periods						Years			
	1881–1885	1886–1890	1891–1895	1896–1900	1901–1905	1906–1910	1910	1911	1912	1913
Russia (European)	49.1	48.2	48.2	49.3	47.7	....	....	....	....	....
Bulgaria	37.2	35.9	37.5	41.0	40.6	42.1	41.7	....	....	....
Roumania	41.8	40.9	41.0	40.2	39.4	40.3	39.2	42.3	43.4	42.1
Jamaica	....	36.8	38.6	38.9	39.0	37.5	38.6	39.0	38.8	35.3
Ceylon	....	30.3	31.7	37.2	38.8	37.5	39.0	37.9	33 3	38.6
Servia	46.3	43.7	43.3	40.1	38.7	39.1	38.5	36.2	38.0	....
Hungary	44.6	43.7	41.7	39.4	37.4	36.7	35.7	35.0	36.3	....
Chili	39.1	35.5	37.0	35.0	36.4	38.3	38.0	38.5	38.7	....
Austria	38.2	37.8	37.4	37.3	35.6	33.6	32.5	31.4	31.3	....
Spain	36.4	36.0	35.3	34.3	35.3	33.6	33.1	31.2	32.6	30.4
Prussia	37.4	37.3	36.9	36.5	34.8	32.3	30.5	29.4	28.9	....
German Empire	37.0	36.5	36.3	36.0	34.3	31.6	29.8	28.6	28.3	....
Italy	38.0	37.5	36.0	34.0	32.6	32.7	33.3	31.5	32.4	....
Japan	....	28.5	28.6	31.1	31.7	32.9	33.9	....	....	....
The Netherlands	34.8	33.6	32.9	32.1	31.5	29.6	28.6	27.8	28.1	28.1
Finland	35.5	34.5	31.8	32.6	31.3	30.9	30.1	29.1	29.1	....
Scotland	33.3	31.4	30.5	30.0	29.2	27.6	26.2	25.6	25.9	25.5
Denmark	32.4	31.4	30.4	30.0	29.0	28.2	27.5	26.7	26.7	25.6
Norway	31.2	30.8	30.2	30.1	28.6	26.3	26.1	25.9	25.6	25.2
England and Wales	33.5	31.4	30.5	29.3	28.2	26.2	25.1	24.4	23.8	23.9
Switzerland	28.6	27.5	27.7	28.5	27.8	26.0	25.0	24.2	24.1	....
Belgium	30.7	29.3	28.9	28.9	27.7	24.7	23.7	22.9	22.6	....
New Zealand	36.3	31.2	27.7	25.7	26.6	27.1	26.2	26.0	26.5	26.1
Australian Commonwealth	35.2	35.2	32.4	27.7	26.4	26.7	26.7	27.2	28.7	28.3
Sweden	29.4	28.8	27.4	26.9	26.1	25.4	24.7	24.0	23.7	23.1
Ireland	23.9	22.8	23.0	23.3	23.1	23.4	23.3	23.2	23.0	22.8
Ontario, Province of	22.4	22.0	19.9	20.1	21.8	23.7	24.9	22.6	22.4	24.0
France	24.7	23.1	22.3	21.9	21.2	19.9	19.6	18.7	19.0	19.0

XXIX. RELIGION AND RELIGIOUS ORGANIZATIONS

CHRISTIAN CHURCHES

H. K. Carroll

ANGLICAN COMMUNION

The Kikuyu Controversy.—The act of two Anglican missionary bishops in Africa in participating in the celebration of the Anglican communion in a Presbyterian Church with representatives of other churches and in agreeing to a transfer of communicants from one church to another of the bodies represented in a missionary union or federation gave rise to a lively controversy in 1914 (*A. Y. B.*, 1914, p. 716). The consultative body, to which the complaint of the Bishop of Zanzibar was submitted by the Archbishop of Canterbury, reported substantially as follows: (1) Ministers of other bodies may be welcomed as visitors to preach in Anglican churches, if accredited by the diocesan bishops; (2) non-Anglicans may be admitted to communion in Anglican churches under authority of diocesan bishops, on acceptance of the Apostles' and Nicene Creeds, the deity of Christ, and the absolute authority of the Scriptures; (3) Anglicans must not receive the communion from ministers not episcopally ordained or whose orders are otherwise irregular; (4) it is wisest to abstain from such services as the closing service held at Kikuyu. These points of the answer of the consultative body were embodied in a statement of the Archbishop of Canterbury, the appearance of which revived the controversy in 1915, the bishops of London and Oxford and others taking issue with the Primate, and the English Church Union, composed of advanced churchmen, adopting a resolution opposing any invitation to members of separatist bodies, by Anglican bishops, admitting them to the Church altars or pulpits. The Archbishop in his statement takes into account the desire for coöperation in great mission fields like Africa and for obtaining a degree of unity among native Christians, and he is not for this and other reasons disposed to interfere unnecessarily with the freedom of missionary bishops in promoting these ends. He has refused to consent to the prosecution of the two bishops accused by the Bishop of Zanzibar.

Canadian General Synod.—This body held its seventh session in Toronto in September, under the presidency of the Primate, Archbishop Matheson of Rupert's Land, in the Upper House, and of Canon Tucker in the Lower. The question of changing the name of the Church—Church of England in Canada—for some broader term was discussed but no action was taken. The chief matter of consideration was prayer-book revision and some progress was made. The plan proposed goes to the provincial synods for approval and comes again before the General Synod at its next triennial session.

The Anglican and Russian Churches.—The Lower House of the Convocation of Canterbury has adopted a resolution instructing its president to enter into communication with the representatives of the Orthodox Church of Russia for closer relations between the two communions.

The Protestant Episcopal Church and the Proposed Missionary Congress at Panama.—Church of England representatives having insisted that the World Missionary Conference of 1910 in Edinburgh, Scotland, should not consider missions in Roman Catholic populations, nor include statistics of them in its statistical tables, American missionary societies decided to hold a conference for the Latin-American republics in Panama early in

1916. The Board of Missions of the Protestant Episcopal Church at first voted not to participate in the conference; but later, in May, 1915, it adopted a resolution authorizing the appointment of delegates and participation in the preparations for the conference, provided that whatever invitation is given to any Christian body shall be sent to every church having work in Latin America. This action, considered by some as sanctioning an intrusion into fields occupied by one of the great communions of the Church of Christ, was the subject of protest on the part of some of the bishops and clergy as an evident effort to commit the Church to "a policy of pan-Protestantism." The Protestant Episcopal Church, it was argued, has always stood between Protestant bodies and the Roman Catholic Church, and if it now allies itself with Protestant bodies it will strike a blow at the hope of Christian unity. At the October meeting of the Board of Missions an effort was made to secure a reversal of the former action. The vote was 13 for and 26 against recision. When the result was announced, five members, including two bishops, resigned their connection with the Board. The Church itself has missions in Mexico and Brazil. Resolutions were subsequently adopted that it is the understanding of the Board that the gathering is not to be one of legislation on ecclesiastical questions or even on matters of missionary policy; but that it is the purpose of the Congress to recognize all the elements of truth and goodness in any form of religious faith, that its approach to the people will be neither critical nor antagonistic, and that all communions and organizations which accept Jesus Christ as divine Saviour and Lord and the Holy Scriptures of the Old and New Testaments and whose purpose it is to make the will of Christ prevail in Latin America, are invited to the Congress. The delegates of the Board are: Bishop Lloyd, president of the Board, Bishop Kinsolving of Brazil, Bishop Knight of Panama, Bishop Hulse of Cuba, Bishop Colmore of Porto Rico, Bishop Brown, coadjutor bishop of Virginia, and Bishop Aves of Mexico.

Episcopal and Congregational Coöperation.—The Congregational Commission on Unity reports a proposition for coöperation between the Episcopal and Congregational churches of Lenox, Mass. The two ministers have joined in a letter to Bishop Davies, of the diocese of western Massachusetts, proposing the merging of men's clubs and Sunday-school services and mission-study classes; a weekly service for prayer and fellowship; a combined choir; and union services throughout the year on Sunday evenings, the ministers preaching alternately. Bishop Davies says the proposition "involves such serious conflict with the canon law of the Episcopal Church that any immediate action other than conference and deliberation seems to me impossible." At his suggestion the proposition has been referred to the Episcopal Commission on Faith and Order and the Congregational Commission on Unity.

Nation-wide Preaching Mission.—Under the authority of action by the General Convention of 1913, a commission, of which Bishop Greer of New York is chairman, issued in May, 1915, a call for a nation-wide preaching mission to be undertaken for a period of two weeks at the beginning of the Advent season of 1915, during which special daily services shall be held in every parish, with the help of missioners.

World Conference on Faith and Order.—At the close of 1914, 49 communions had, it was announced, appointed commissions on this subject (*A. Y. B.*, 1914, p. 716). The outbreak of the European War compelled a suspension of plans. No meetings of the Commission were held in 1915. Further action awaits the end of the war.

BAPTIST

Northern Baptist Convention.—The annual session of the Northern Baptist Convention was held in 1915 in Los Angeles, beginning May 19. The president of the Convention, Judge Edward L. Clinch of New York, declared in his presidential address that "the Convention has passed through its experimental stage and its whole system is working smooth-

ly." It had already accomplished much and "yet has only begun its work of coördination and coöperation." Reports from the Foreign Mission Society showed a total income of $1,110,375, and from the Home Mission Society, of $650,495, besides income from invested funds of $96,819. It was announced that the Home Mission Society had freed itself from a heavy indebtedness of upwards of $276,000. The publication society, which has a missionary department, reported receipts of $128,836 from churches and individuals; the income in addition to this was the income on invested funds, special gifts, etc., all making a grand total of $232,837. The Convention recommended a total budget for all its societies for 1915-16 of $2,610,000, including $121,700 for the Convention itself. The Convention adopted a five-year programme calling for "a million additions to our churches by baptism"; a missionary force of 5,000 men and women in America and the non-Christian world; two million dollars of endowment for the Ministers' and Missionaries' Benefit Board; six million dollars for additional educational endowment and equipment at home and abroad; and an annual income of $6,000,000 for missions and benevolence. The methods recommended for the carrying out of this programme were: a persistent, pervasive evangelism, personal, pastoral and vocational; the systematic and proportionate giving of not less than one-tenth of the income, with larger giving by those of large resources; an annual every-member canvass for weekly contributions; an increasing emphasis on education, Biblical, missionary and scholastic; the development of every church in social service; and prevailing prayer, personal, public and social.

Southern Baptist Convention.—The annual session of the Southern Baptist Convention was held in Houston, Tex., in May. The attendance was much less than usual, numbering only about one thousand delegates. This was probably due to the fact that the place of meeting was distant from most of the territory of the Southern Baptist churches. Dr. Lansing Burrows was elected president. The committee on efficiency reported, recommending that the Sunday-school, the home-mission and foreign-mission boards be not consolidated, but that they should be constituted representatively and continue as separate boards, and that the papers representing respectively the home- and foreign-mission boards should not be merged. The Southern Baptists, it stated, are now in a serious situation and must go forward bravely or go backward. With opportunities practically limitless before them and with resources that are adequate and constantly advancing in every way, a halt now would stagnate the currents of progress indefinitely, and therefore the highest endeavors should be put forth to give the Baptist message wherever opportunity permits. The apportionments submitted for home and foreign missions call for a total of $1,065,750 to be raised by the end of April, 1916.

Free Baptist General Conference.—This body met in July, 1915, at Ocean Park, Maine, and received reports concerning the activity of its churches and especially of the progress of union with the Northern Baptist Convention. The report of the corresponding secretary states that in practically all the states, union of state organizations is now the proximate goal, with Nebraska as the only exception. In Nebraska a comparatively few are detaining the process of union and "it may be needful to appeal to the courts, in order to secure for the local churches in that state the rights of holding and administering their own property and of seeking the fellowship of the Northern Baptist organization." It is stated that the time does not seem very distant "when we should cease to regard ourselves as a separate denomination." There is no longer the machinery for gathering statistics of the Free Baptists, many churches and yearly meetings having already united with churches and organizations of the Northern Baptist Convention.

National Baptist Convention.—Colored Baptists have over two million communicants. At the meeting of the National Baptist Convention in Chicago in September, representing the colored Baptists of the United

States, a division took place over the question of incorporating the Convention. Those who disagreed with the features of the bill of incorporation, which was secured in the District of Columbia, separated from the Convention after an unsuccessful appeal to the courts to prohibit the officers from proceeding with their convention, and organized a separate convention.

CONGREGATIONAL

National Congregational Council.—The chief event of the year among the Congregational churches was the biennial session of the National Congregational Council at New Haven in October. H. M. Beardsley of Kansas was elected moderator, succeeding Prof. Charles R. Brown of New Haven. The matter of chief interest in the session of the Council was the report of the commission on the reorganization of the denominational missionary societies. This commission, of which President Henry C. King of Oberlin College was chairman, and Dr. Hubert C. Herring, secretary, reported a new federation plan, the main points of which are as follows. First, the Congregational Board of Ministerial Relief was left as it is, having an independent organization, with headquarters in New York. Second, the American Missionary Association was left a separate organization with its headquarters in New York; such missionary work among the whites as it has hitherto conducted is to be transferred to the Home Missionary Society, and it is to receive under its care in return certain institutions hitherto operated by the Educational Society, mainly among the Indians. Third, the Home Missionary Board, the Church Building Society and the Sunday School Society are grouped together under a common directorate and a common general secretary with headquarters in New York; within this group the Sunday-school extension work is to be conducted under the name Congregational Sunday School Society, and if deemed expedient, it may be incorporated for the purpose of holding property and receiving legacies and other gifts. Fourth, the Congregational Publishing Society and the Congregational Education Society are grouped under a common directorate and a common general secretary. Its functions are editing, printing and marketing; Sunday School education; education in missions; general religious education; social service, student welfare and college aid. Its headquarters are to be in Boston.

Other items of business transacted by the Council included a resolution that a long reading course or correspondence course be required as a minimum qualification of non-collegiate candidates for ordination, and the declaration that the denominational committee on union is ready to meet committees of other denominations on the subject of church unity. Resolutions to observe the four-hundredth anniversary of the Lutheran Reformation in 1917 and of the Pilgrims in 1920 were adopted. With reference to the European War, the Council recognized the weighty responsibility resting upon the President of the United States and commended him for the wisdom and strength he has shown, and asked both the President and Congress "to take no steps toward increased armament not necessitated by grave conditions of national defense." The opinion was expressed that the energy of our Government at this crisis should be given to working out, in cooperation with other governments, of a plan of international organization that shall render the recurrence of the present world tragedy impossible. A committee was appointed to present to the President of the United States memorials touching Armenian atrocities and also the resolutions concerning national preparedness. The report of the American Board declared that the year had been one of unparalleled trial and triumph. The income of the Board had, it was stated, been increased, the receipts from all sources exceeding by more than $100,000 the million mark. The troubles in Turkey and Mexico and other fields were set forth; and yet the present was regarded as a time for a forward movement. The next meeting of the Council in 1917 is to be held in California. One of the features of the meeting of the Coun-

cil was the fact that a number of pulpits of the Protestant Episcopal Church in New Haven were, with the express approval of the bishop of the diocese, open to members of the Congregational Council.

LUTHERAN

The General Synod.—The General Synod met in its forty-seventh biennial session at Akron, O., on May 26, and was characterized by a spirit of harmony. A note for a united Lutheran church in America was sounded frequently and strongly, and it was intimated that until Lutherans can agree among themselves a broader union is out of the question. An important step was taken toward closer relations between the General Synod and other Lutheran bodies in authorizing the committee on practical cooperation to consider definite plans for union in consultation with any committee authorized to represent any other Lutheran body. In connection with the four-hundredth anniversary of the Reformation, the General Synod in conjunction with the General Council, the United Synod South and the independent synods of Ohio and Iowa will plan for a most notable celebration. The General Synod proposes to raise as a memorial a million dollars for education. The Home Mission and Church Extension Boards were consolidated, the committee on the Common Service and Hymnal was authorized to complete its work, which is for the General Synod, the General Council and the United Synod South, and the Sunday-school committee received final authority to furnish a series of graded lessons for the Sunday schools of the above named three general bodies and the independent synod of Ohio. Rev. J. A. Singmaster is president of the General Synod.

The General Council.—The biennial session of the General Council was held at Rock Island, Ill., in September, under the presidency of Dr. T. E. Schmauk. The General Council met the previous action of the General Synod by appointing a committee on union. The matter of greatest concern was prior action of the Augustana Synod, which seemed to involve withdrawal from the General Council. But this danger was happily averted by a resolution providing for a revision of the constitution of the General Council, to be reported in 1917, with the object of providing full liberty to the district synods in matters specially concerning them.

Lutheran Union.—There has been no little discussion in the Lutheran press and elsewhere on the subject of Lutheran union. While Lutherans are comprehended in one communion, they are not organically one ecclesiastically. There are four general bodies of Lutherans in the United States, the General Synod, with 340,000 communicants, the General Council, with 480,000, the United Synod South, with 52,000 and the Synodical Conference, with more than 850,000. There are also 17 independent synods, of which the largest, the United Norwegian, has 168,000, and the smallest only 1,100. It is pointed out that in Minneapolis, for example, a great Lutheran city, the 62 Lutheran churches, 58 pastors, and 17,000 communicants represent 11 different synods, and that these churches, pastors and communicants have "less to do with one another by way of cooperation and harmonious action than the various denominations of the Reformed Church." It has been suggested that the general bodies and leading independent synods hold conferences on union. The General Synod, the General Council, the United Synod South and the Synod of Ohio have each indicated a desire for a general union, and for such measures as will bring "Lutheran separatism" to an end. Three Norwegian Lutheran bodies are proposing to unite, the Norwegian, the United Norwegian and the Hauge Synod, and the United Synod has adopted the proposed union constitution unanimously.

Increase in the Use of the English Language.—Reports of pastors of Hauge's Lutheran Norwegian Synod show that English services are increasing. Of 107 congregations, 34 use Norwegian exclusively, three English exclusively, and 60 both tongues. In Sunday schools those using the Norwegian have 1,577 pupils and those using the English 1,493. In

1914, 285 young people were confirmed in Norwegian and 170 in English. These figures probably represent more or less truly the condition of things in other foreign-speaking bodies.

METHODIST

Methodist Unification.—The question of Methodist union came into greater prominence in discussion during 1915 than in any previous period. The plan for the organic union of the Methodist Episcopal Church, the Methodist Protestant Church and the Methodist Episcopal Church, South, and other bodies (*A. Y. B.*, 1914, p. 720) involves first disunion, the creating of three or more jurisdictional bodies, one in the South and two in the North and West, and the union of these quadrennial jurisdictional conferences in one body, with a General Conference of supreme authority in legislation. Two books have appeared, one by Bishop Cranston, presiding bishop of the Methodist Episcopal Church, in strong advocacy of the general features of the plan, and one by Dr. Claudius B. Spencer, editor of the *Central Christian Advocate*, favoring unification but suggesting the need of serious modifications of the proposed method. A notable editorial in the Pittsburgh *Christian Advocate*, of the Methodist Episcopal Church, insists that the most serious hindrance to organic union is the feature of the proposed plan which practically constitutes the Methodist Episcopal Church, South, one of the quadrennial divisions, while the Methodist Episcopal Church is to be split into two divisions.

The bishops of the Methodist Episcopal Church adopted, at their spring conference in May, a statement in which they say they are convinced of the essential unity of the two great Methodisms in doctrine and life and that this essential unity must in due time express itself in organic form. Without pronouncing upon the terms of union they declare in favor of "the organic union of the Methodist Episcopal Church and the Methodist Episcopal Church, South, and of such other Methodist bodies as may share our common faith and experience . . . upon terms that shall provide an ample and brotherly protection for any minority."

One of the questions which gives rise to considerable difference of opinion is that of the Negro Methodists. There are upward of 300,000 in the Methodist Episcopal Church alone, and it has been suggested that while the Church could not force them out, they might relieve the situation by offering to retire and join with various colored bodies in the formation of a Negro quadrennial conference. Many, however, are opposed to the recommendation of the Southern Methodist General Conference to omit colored Methodists from the combination. A conference of joint commissions of the Methodist Episcopal, African, African Zion, and Colored Methodist Episcopal Churches was held in Cincinnati in June, at which a declaration on coöperation, federation and organic union was adopted. Most of the commissioners were colored men, but with colored representatives of the Methodist Episcopal Church were also Bishops Neely and Henderson, white. The resolutions on federation and cooperation set forth the points on which the participating Churches might serve the cause of economy, efficiency and a better understanding. As to organic union, the commissioners joined in hailing it as an object to be kept in view and to be forwarded in every possible way, in holding that in plans for union all branches of Methodism should be considered alike, and in promising to seek the continuance by the respective bodies of these commissions.

General Conferences.—The General Conferences of the Free Methodist Church and the Wesleyan Methodist Church held their quadrennial sessions in 1915, the former at Chicago, the latter at Houghton, N. Y. The Free Methodist Conference adopted a constitution and appointed a committee on union with the Wesleyan body, negotiations for which have long been pending. It discussed at considerable length the question of labor unionism, reaching action which, while admitting the right of laboring men to combine for betterment, condemned the oath-bound secrecy feature and such evils as

coercion and lawlessness, and forbade Free Methodists from joining them. It also declared against discrimination by employers in favor of unionism as against non-unionism, and pronounced such discrimination on the part of Free Methodist employers a bar to membership in the Church. The Wesleyan General Conference reappointed its committee on union with the Free Methodist Church, and adopted stringent provisions on the tobacco question, forbidding members of the Church to use, manufacture, or sell tobacco in any form. This action goes to the annual conferences for approval.

Methodist Growth.—The increase for the year 1914 of the various Methodist bodies was 396 ministers, 265 churches and 231,460 communicants. Of the increase in number of communicants, the Methodist Episcopal Church reported 187,497, the Methodist Episcopal Church, South, 36,530, the Colored Methodist Episcopal Church, 4,721, and four other bodies from 500 to 900 each.

The Asbury Centenary.—The centenary of the death of Bishop Asbury is to be observed by all branches of American Methodism in 1916. A general committee, composed of representatives of all the Methodist Churches in the United States and Canada, has been organized, with headquarters in Washington. The features of the celebration include a programme by every annual conference in America at its session in 1916, sermons from every Methodist pulpit on the Sunday nearest the date of the anniversary of Bishop Asbury's death, March 26, or on Sunday, June 4, a wide circulation of literature relating to the men and events of early American Methodism, and the erection of a bronze equestrian statue of Bishop Asbury in Washington from the voluntary contributions of American Methodist Churches.

Union of Methodist Protestants and United Brethren.—The pending plan for the union of the Methodist Protestant Church and the Church of the United Brethren in Christ has been delayed by action of the Board of Bishops of the latter body in determining not to present the basis to the vote of the churches of that denomination at present. The bishops stated their continued desire for the union of the two bodies which are of similar faith and order, but they were "compelled to declare that, owing to the fact that in those sections of both denominations involved where each is rich in tradition and history and where conferences are strongest numerically, as well as financially, a mutual disinclination exists which is determined and insistent to a degree that compels us to postpone referring the question of union to the vote of our people." It appears that nothing further can be done in the matter until the next meeting of the General Conference of the United Brethren in Christ, which will be in 1917. The General Conference of the Methodist Protestant Church meets in 1916.

PRESBYTERIAN

Northern General Assembly.—The General Assembly of the Presbyterian Church in the United States of America held its 1915 session in Rochester, N. Y. Rev. J. Ross Stevenson, of Princeton Theological Seminary, was elected moderator. The committee on evangelization reported that there had been a general awakening throughout the Church, and pointed to the fact that the accessions during the year 1914-15 were the largest in the history of the Church, exceeding those of 1913-14 by more than 20,000. The question of greatest interest was that of the relation of the General Assembly to the Union Theological Seminary of New York City. This subject has been before many recent General Assemblies. At Atlanta, in 1913, a committee was appointed to make a thorough investigation of the subject (*A. Y. B.*, 1913, p. 756), which presented its report at Rochester. The report was divided into three parts: The first part dealt with the legal questions involved, setting forth that while the constitution and charter of the Seminary required it to be conformed to the Presbyterian confession of faith and principles of government, nevertheless the compact of 1870, which brought the Seminary into organic relations with the General Assembly is null and void

and the Seminary is entirely independent of the Presbyterian Church. The second part of the committee's report, relating to doctrinal matters, declared that down to 1891 the Seminary in its teachings was in harmony with the Presbyterian doctrines and standards. Since 1891 there had been an evident departure from the Presbyterian standards and the Seminary is no longer in harmony with the doctrines of the Church, but its teachings are in antagonism thereto. The third part, on ecclesiastical relations, was to the effect that there are no constitutional ecclesiastical relations between the Seminary and the General Assembly. On the question of the adoption of this report there was a long and earnest discussion, in which President Brown of the Seminary was heard at length. The report was adopted by an overwhelming majority. This action indicates the termination of the compact of 1870 and leaves the Seminary entirely independent of the Presbyterian Church.

A memorial was received from the Presbyterian Church in the United States (Southern) with reference to an alleged violation of comity on the part of certain representatives of the Northern Presbyterian Church; the matter was referred to the executive committee to confer with the committee of the Southern Church concerning the whole matter. The General Assembly decided to consolidate the Board of Colleges and the Board of Education, making a new Board of Colleges and Education. The matter of the policy of the Board of Home Missions came under consideration, and while the pioneer work of the Board in relation to the problems of immigration, social service, and the needs of rural committees was approved, confidence was expressed that this work will be conducted with due consideration of the wider aims of the Board in assisting in the support of preaching the gospel in feeble churches and congregations and supervising the whole work of home missions. The General Assembly adopted a budget for the year 1915-16 as follows: home missions, $1,781,000; foreign missions, $1,750,000; education, $150,000; publication and special work, $200,000; church erection, $120,000; ministerial relief and sustentation, $175,000; freedmen, $215,000; colleges, $250,000; temperance, $45,000. The General Assembly adopted a resolution congratulating the American Bible Society on its ninety-ninth year just completed, which shows an issue far beyond anything in its history, making a total of 6,370,485 volumes and bringing the total circulation for 99 years to 109,890,356 volumes. The executive commission during the year issued a statement under the title "Declaration of the Essential Principles of the Protestant Reformation," with reference to the semi-millennial anniversary of the martyrdom of John Huss. Some of the presbyteries adopted overtures raising the question of the right of the executive commission to make such a statement. The General Assembly adopted a report of its committee on bills and overtures declaring that the executive commission was within its right in making this statement as a part of the proper preparation and observance of the Huss memorial. Provision was made by the Assembly for the proper observance of the two-hundredth anniversary of the first meeting of the General Synod of the Presbyterian Church in the United States, the General Synod having been the forerunner of the General Assembly.

The statistics of the Presbyterian Church show a decrease in synods, presbyteries, candidates, local evangelists, licentiates and churches for the year, but an increase in nearly all other items. There was an increase in the number of baptisms of adults and of infants. The number of members of the Sunday schools is 1,375,875, an increase of nearly 57,000. The total of contributions for home and foreign missions and other boards and purposes reached the grand total of $27,785,036, indicating an increase of over $100,000 for the year. The income for home missions was $1,954,000 and for foreign missions $1,813,000. The amount raised for congregational expenses was $19,634,000.

Southern General Assembly.—The General Assembly of the Presbyterian Church in the United States held its session for 1915 in Newport News, Va. Rev. W. McF. Alexander was

elected moderator. A new synod was created by action of the General Assembly to be called the Synod of Appalachia, known popularly as the "Mountain Synod." It consists of presbyteries in Tennessee, North Carolina, Virginia and Kentucky. The purpose in the creation of the new synod is to unify the work of the Church in the mountain section, to develop the work internally, and to magnify this mountain work in the eyes of the world. A committee was appointed to make a careful study of the teaching of the scriptures on the subject of woman's position in the Church and to report to the next General Assembly; this committee also is to consider the matter of church entertainments and kindred methods of raising money for church purposes. A committee was also appointed to consider the status and work of the colored presbyteries and churches under the care of the General Assembly and to devise, if possible, some more definite policy for future development and better plans for coördinating them for mutual counsel and help. The General Assembly adopted a resolution declaring that the traffic in and use of intoxicating liquors as a beverage is the prolific cause of crime, poverty, and suffering and is moreover very costly, and it is one of the greatest enemies of the Church of Christ. The Assembly "recommends to all people the use of all legitimate means for its banishment from the land." The next General Assembly will be held in Orlando, Fla. The statistics reported to the General Assembly show that ministers, churches and communicants increased; the total contributions were $4,792,860, indicating a falling off from the previous year of $294,000. This was largely in the item of congregational expenses and of miscellaneous. The receipts for foreign missions were $544,162, and for home missions $528,847, an increase over the preceding year.

Presbyterian Union in Scotland.—The European War absorbed the interest and attention of the Presbyterian General Assembly in Scotland during the year. No progress was reported on the question of the union of the Established Church and the United Free Church. The committee on union of the latter body reported that it had suspended its negotiations with the Church of Scotland committee for the present. The Assembly voted to continue the committee and similar action was taken by the Assembly of the Established Church. The two assemblies held a united devotional service of intercession for national victory. A feature of the Free Church Assembly session was the report of the committee on the place of women in the Church's life and work. The report stated that some members of the committee inclined to the view that all offices of the Church should be open to women on the same terms as men, but it was declared that the opinion of the Church is not yet ripe for consideration of such a far-reaching change. The report, however, favors the election of women members on boards of deaconess and proposes that women shall be elected on authorized committees of consultation and sit in conference with church sessions, assuming a portion of the pastoral duties of the eldership. The report also suggested that the office of "church sister," workers giving their whole time to church work, should be created, and that women be appointed on committees of Assembly and presbyteries and on the councils of various foreign mission fields. The report was sent down to the presbyteries for consideration.

ROMAN CATHOLIC

American Federation of Catholic Societies.—The American Federation of Catholic Societies, an organization of the Catholic laity of the United States, under the guidance of the hierarchy, held its 1915 session in Toledo, O. The Federation declared its views as to industrial relations, various social questions, the care of inmates of penal institutions, divorce, immoral literature, pictures and exhibitions, Catholic education, the public schools, peace, the care of the Indians, the observance of Sunday, etc. On the subject of public schools it notes with satisfaction the increasing discontent of non-Catholics with a system of education which eliminates

religious instruction; but it protests against Bible-reading in the schools as virtually sectarian and also against the holding of closing exercises in churches. The platform deeply deplores the increasing tendency of the masses "to turn the Lord's Day into a day of mere pleasure and frivolous amusement." It insists that it was given as a day of rest from labor and as a day of worship. The neglect of the institution means the ruin of individuals, families and nations, and the act of employers in compelling employees to perform unnecessary work on Sunday is severely condemned.

Increase of the Church.—The increase in Catholic population for 1914 was more than 241,000, of churches 310 and of priests 426. There were 14 archbishops, three of whom are cardinals, and 102 bishops. The 5,488 parochial schools were attended by 1,456,206 children. The number of priests was 18,994, of churches 14,961, of "population" 16,309,310, and of communicants 13,862,913. The figures for population include 500,000 Ruthenians, who are under the care of a Ruthenian bishop.

The Pope and the War.—Pope Benedict XV has from its outbreak taken unwearied interest in the course of the European War and has sought in every way to ameliorate the suffering it causes. He has established a bureau in his palace with a large force of priests and laymen, charged with the duty of looking up missing soldiers and civilians. Upward of 5,000 of these missing persons have been discovered and put into communication with their families. The Pope also coöperates in the care of 20,000 sick and wounded soldiers of seven nations in Switzerland, for whose physical needs the Swiss Government is caring generously.

MISCELLANEOUS

Presbyterian, Congregational and Methodist Union in Canada.—The long pending plan of the union of these three denominations in Canada has not been finally approved, but may be considered to have advanced a step during the year. In 1914 the basis was amended somewhat to meet difficulties in the Presbyterian Church and was submitted to the other denominations for approval (*A. Y. B.*, 1914, p. 723). The amendments were duly approved by the Methodists and Congregationalists and came before the General Assembly of the Presbyterian Church at its session in the first half of 1915 in Kingston, Ont. The committee in charge of the matter recommended that the amended basis of union be submitted to the presbyteries, the sessions, the communicants, and the adherents of the church. After considerable discussion the Assembly voted 368 to 74 to submit the basis of union to the vote of Presbyterians in October and December, 1915. The minority in the Assembly is the smallest it has been since the question of union was first agitated.

Reunion of the Evangelical Association and the United Evangelical Church.—These two bodies, separated some years ago, have been in correspondence looking to reunion. The proposed basis has been amended so as to meet objections, and it is now before both bodies for consideration.

Conference of the Dunkards.—Among the quaint and curious denominations of the United States are two or three bodies known popularly as Dunkards. They call themselves, however, simply the Church of the Brethren or Brethren Church. The largest of these divisions held its conference in 1915 in the vicinity of Harrisburg and during its session Governor Brumbaugh of Pennsylvania, an ordained minister of the Church and its historian, delivered an address on peace. The conference devoted much consideration to such subjects as Sunday schools, education, missions, periodicals, and questions of doctrine and customs. Formerly there was much legislation on the subject of dress, habits, and customs, but in recent years more attention has been paid to aggressive church work. A committee was appointed at the conference to confer with a similar committee from the progressive branch concerning a possible basis of union.

Christian Endeavor Convention.—The twenty-seventh session of the International Christian Endeavor Con-

vention was held in Chicago in July. Resolutions were adopted endorsing the fight on the liquor traffic, the promotion of international peace, the use of the Bible in the public schools, better Sabbath observance, and a pronouncement on strikes and lock-outs. The number of registered delegates exceeded 10,000.

A Sacred Book of the Mormons Subjected to Scientific Examination.—What is known to Mormons as the "Book of Abraham," claimed to be a translation by Joseph Smith "of some ancient records that have fallen into our hands from the catacombs of Egypt; the writings of Abraham while he was in Egypt, called the 'Book of Abraham,' written down by his own hand upon papyrus," has been submitted to archæologists for examination. The documents prove to be genuine, ancient Egyptian hieroglyphics. When Smith's translation was made, no man could prove that it was not correct for the hieroglyphics could not then be read. Two years ago Bishop Spalding of Utah persuaded the Mormon leaders to submit the "Book of Abraham" to the inspection of Egyptian scholars. An examination of the inscriptions, which are not upon papyrus but upon small clay objects, show that the Smith translation was purely imaginary. The inscriptions make no mention of Abraham in Egypt, but are merely short prayers to the Egyptian sun god.

Federation of Interdenominational Organizations.—There was held in Atlantic City, in June, a Conference on Inter-Church Activities, including representatives of the International Sunday School Association, the Sunday School Council of the evangelical denominations, the International Committee of the Y. M. C. A., the National Board of the Y. W. C. A., Christian Endeavor, Epworth League, Baptist Young People's Union, Brotherhood of St. Andrew, Brotherhood of Andrew and Philip, Brotherhood of Bible Class Movements, Laymen's Missionary Movement, Missionary Education Movement, and various other bodies. After discussion it was agreed that in order to save effort and expense, particularly in projected movements and programmes, there should be established a commission under the auspices of the Federal Council of the Churches of Christ in America, to be known as the Commission on Federated Movements. The outcome of the conference was an agreement that such a commission should be created for the purpose of conference concerning projected campaigns or movements that harmony of action might so far as possible be secured. The Commission was organized with Fred B. Smith as chairman, and Rev. Curtis Guild as secretary.

Religious Instruction to Public-School Pupils.—The Commission on Religious Education of the Federal Council of the Churches of Christ in America has suggested a plan for religious instruction of public-school pupils. It proposes that pastors of churches organize a staff of trained teachers for the purpose, secure suitable rooms within easy distance of the public schools, and join with the parents in a request to the public-school authorities to release pupils for religious instruction one-half day a week, pupils who do this work not to be retarded in their advancement in the grades. The Commission represents the 30 denominations which are constituent bodies of the Federal Council. The feeling is growing that religious instruction should be given to public-school pupils on week days but in such a way as not to violate the non-sectarian character of the schools. The Gary plan (*A. Y. B.*, 1913, p. 817) appears to lend itself to the suggestions of the Commission, and a trial of it is being made in New York City, both Protestants and Roman Catholics taking steps to provide rooms and teachers for religious instruction.

JUDAISM

ABRAM S. ISAACS

Progress in Palestine.—Henrietta Szold, secretary of the American Jewish Publication Society, gives in the latest *American Jewish Year Book* a clear and full account of Jewish progress in Palestine, for which

the Zionist movement has been largely responsible. The Jewish population in 1914 amounted to 100,000, of whom 15,000 were in the rural settlements, about 14 per cent. of the entire population—a very rapid rate of growth in 30 years. The chief streams of Jewish population flow from Yemen, in Arabia, and from eastern Europe. Owing to the new Turkish constitution, which imposes military duty upon all classes, emigration has increased considerably, especially among young men. Through coöperation the colonies, after fluctuating fortunes, have shown marked growth. Fully 500,000 boxes of oranges, at the last estimate, came from Jewish plantations; the wine trade, too, is promising; the Anglo-Palestine Bank exerts a salutary influence, aiding many mutual loan associations, while the credit and educational system maintained by the Jewish Colonization Association (Baron de Hirsch's benefaction) has been of great advantage in purchasing land and solving the labor problem. Among other helpful societies are the Palestine Land Development Co., Tiberias Plantation Co. (experimenting with cotton), and the Irrigation Society, with its plant for irrigating some orange plantations. The trans-Jordan region is said to be most promising for settlement. There are reforestation stations, an industrial colony of Yemenites, and an agricultural experiment station, with a system of plant exchanges between Palestine and America. With the rapid industrial and cultural development, the possibilities are many and hopeful, despite numerous vexatious problems that are still to be solved, and others that have been precipitated by the war.

The War and the Jews.—It is admitted that of all the religious groups in the various countries at war the conditions of the Jew has been most pitiable, in Poland, Galicia and Russia. The military zone of occupation in the eastern campaigns included repeatedly territory where the larger numbers of Jews reside or are permitted legally to reside. It is a pitiful story of voluntary and forced expatriation, hurried flight at the point of the sword, poverty, starvation, persecution, and death. Full data are still lacking, but the bloodiest records of the Middle Ages are surpassed in horror. It is peculiarly tragic that, as fully 400,000 Jews fought in the Russian army, their relatives and friends at home should have experienced hardships at the hand of the Government and its subordinates, while occasional rumors of effective reforms were rarely realized. Happily the whole world of Jewry arose to the work of relief. In the United States, in addition to Jewish contributions to the Red Cross and other funds, about $1,400,000 was raised by the American Jewish Relief Committee and the Central Relief Fund. Further amounts are being collected and will be continued until the war's end. On March 14 the Navy collier *Vulcan* sailed from Philadelphia with 1,000 tons of food and supplies purchased by and donated to that committee for Palestine; 70 additional tons were taken on board at Alexandria, Egypt. The need of relief was emphasized by the commissioners of the Rockefeller Foundation, who on May 21 cabled from Poland: "Conditions in Poland are much worse than the worst in Belgium or northern France, and the population is now actually starving. Its most urgent need for outside aid is for the Jewish population." A resolution has been introduced in Congress requesting the Government to advocate the emancipation of Jews in belligerent countries. A movement to call a conference of Jewish societies in the interest of the Jews abroad after the war with the view to their permanent emancipation and to encourage settlement in Palestine is being encouraged by many, but meets much criticism. A preliminary meeting was announced to take place late in November, the Zionist element being its strongest supporters, to organize a congress on the broadest democratic plan.

The Order of B'nai B'rith.—This most influential of Jewish fraternities in the United States held its Constitution Grand Lodge Convention in San Francisco in May. The members now number 40,083, with 308 lodges at home and 134 abroad, the district headquarters of the foreign lodges be-

ing in Berlin, Bucharest, Vienna, Constantinople. The year has witnessed rapid growth. It supports religious schools, charitable work, industrial and manual training, and social welfare. At the San Francisco session it was resolved to create a social-service bureau and to impose a *per capita* tax on all members for an emergency charitable fund to be distributed by the district lodges. Rev. Dr. Coffee of Pittsburgh has been elected social director.

Dedication of Synagogues and Other Institutions.—The principal Jewish institutions opened during the year include: Samuel Grabfelder Medical Building of the National Jewish Hospital, Denver; synagogues at Wilmington, Del., New Orleans, Baltimore, Boston, Chelsea, Dorchester, Maplewood, Mass., Minneapolis, Hoboken, Jersey City, New York City, Rockville Centre, N. Y., Lima, O., Philadelphia and Memphis; a Y. W. H. A. building at Washington, and a Y. M. H. A. at Louisville; Hebrew Hospital, Baltimore; Home for Aged, Buffalo; Jewish Institute, Brooklyn; B. Gimbel Memorial School, Philadelphia.

Civil Rights.—President Wilson's veto of the Burnett Immigration bill (Jan. 28) was favorably received, many protests against the literacy test having been forwarded by Jewish societies. Further activity against Bible reading in public schools met favorable results in Louisiana, Ohio, Vermont, Michigan and New York. Following similar action on the part of the New York legislature, a bill was introduced in the Pennsylvania legislature on March 12, making it a misdemeanor for hotels, etc., to advertise or circularize that they exclude persons because of any religion or race.

Events in the United States.—Due wholly to the war, a marked decrease occurred in Jewish immigration. According to data from January to July, inclusive, in 1914 the arrivals at New York, Philadelphia, and Boston numbered 53,349; in 1915, 3,544, of which 3,053 were destined for the north and central Atlantic states. Centenary celebrations of the birth of Rev. Drs. Max Lilienthal and Samuel Hirsch were held, and the celebrations included the twenty-fifth anniversaries of the Baron de Hirsch Fund and the New York Educational Alliance. The lynching of Leo Frank near Atlanta aroused intense indignation, after the governor of Georgia had commuted his sentence to life imprisonment (see also IX, *Law and Jurisprudence*). The death on Nov. 19 of Dr. Solomon Schechter, head of the New York Jewish Seminary and a scholar of international note, caused much sorrow.

Events Abroad.—Emil Vandervelde, the Socialist member of the Belgian Cabinet, declared on Feb. 12 that when peace terms are negotiated, the Socialists are prepared to demand equality for Jews of Russia and Roumania. In April a Zion Mule Transport Corps, composed wholly of Jewish refugees from Palestine, was attached to the British forces. Gen. Jules Heyman was promoted to command of a French army corps. The B'nai B'rith lodges of Germany sent a hospital supply train of 28 cars to the front. Fresh restrictions, revival of old anti-Jewish laws, with here and there gratifying efforts to remove harsh measures and secure more civil liberty, were chronicled in Russia. In Turkey early in January, the Government gave to the Jewish community the building in which were housed schools for converting the Jews to Christianity and which had been closed by the authorities. A loan of $120,000 was raised in the United States, France, and England for the relief of orange-growers in Palestine. The schools of the Alliance Israelite continue unrestricted by the Ottoman authorities in Turkey, the Zionist institutions have been less fortunate. Arthur M. Myers was chosen Minister of Munitions and Customs in the new cabinet of New Zealand. Dr. Rudolph Schover was made Chief Justice of Belgium by the German Government and Deputy Aronson of the Prussian Diet finanical agent of Poland. M. Weinstein, an Odessa merchant, was appointed a member of the Council of the Russian Empire, the first Jew to receive such an honor. Lazzaro Frizzi and Leone Wollemberg were appointed to the Senate of Italy. Herbert Samuel was made Postmaster General of Great Britain, and Edwin Samuel

Montagu became successively a member of the British Privy Council and the British Cabinet, and Financial Secretary to the Treasury.

RELIGIOUS BODIES IN THE UNITED STATES IN 1914[1]

The grand totals of this table show increases for the year as follows (see *A. Y. B.*, 1914, p. 729); ministers, 3,235; churches, 1,314; communicants, 860,488. Of this increase of communicants, the Roman Catholic Church had 205,126, the Methodists 231,460, the Baptists 122,125, the Lutherans 56,248, and the Presbyterians 56,019.

	Bodies	Ministers	Churches	Communicants
Adventists	6	1,169	2,579	98,927
Baptists	15	42,710	57,537	6,179,622
Brethren (Dunkards)	4	3,433	1,289	121,475
Brethren (Plymouth)	4	.....	403	10,566
Brethren (River)	3	224	105	4,903
Buddhist	2	15	74	3,165
Catholic Apostolic	2	33	24	4,927
Catholics (Eastern Orthodox)	7	341	401	462,500
Catholics (Western)	2	19,029	15,002	13,881,413
Christadelphians	..	.....	70	1,412
Christians	..	1,066	1,360	113,887
Christian Catholic (Dowie)	..	35	17	5,865
Christian Scientists	..	2,672	1,336	85,096
Christian Union	..	354	302	15,217
Churches of God (Winebrennarian)	..	509	595	41,475
Churches of the Living God (Colored)	3	101	68	4,286
Churches of the New Jerusalem	2	143	147	9,671
Communistic Societies	2	.....	22	2,272
Congregationalists	..	6,091	6,129	763,182
Disciples of Christ	2	8,261	11,143	1,519,821
Evangelical	2	1,569	2,598	194,535
Faith Associations	9	241	146	9,572
Free Christian Zion Church	..	20	15	1,835
Friends	4	1,471	1,042	122,004
Friends of the Temple	..	3	3	376
German Evangelical Protestant	..	59	66	34,704
German Evangelical Synod	..	1,058	1,365	290,803
Jewish Congregations	..	1,084	1,769	143,000
Latter-Day Saints	2	3,800	1,625	375,000
Lutherans	21	9,450	16,220	2,444,970
Mennonites	12	1,413	736	57,337
Methodists	16	41,525	62,416	7,328,829
Moravian	2	147	143	20,615
Nonsectarian Bible Faith Churches	..	50	204	6,396
Pentecostal	2	802	738	28,946
Presbyterians	12	14,066	16,834	2,083,617
Protestant Episcopal	2	5,629	8,002	1,026,048
Reformed	4	2,177	2,770	478,951
Reformed Catholic	..	7	6	3,250
Salvationists	2	2,967	924	27,893
Scandinavian Evangelical	3	629	857	72,900
Schwenkfelders	..	5	6	1,039
Social Brethren	..	15	17	1,262
Society for Ethical Culture	..	7	6	2,450
Spiritualists	..	.....	2,100	200,000
Theosophical Society	..	.....	154	4,714
Unitarians	..	524	475	70,542
United Brethren	2	2,260	4,086	343,016
Universalists	..	650	717	52,000
Independent Congregations	..	267	879	48,673
Total	..	178,081	225,522	38,804,959

[1] Statistics compiled by H. K. Carroll.

XXX. ART, ARCHÆOLOGY, MUSIC, AND DRAMA

PAINTING, SCULPTURE, AND HANDICRAFTS

WILLIAM B. M'CORMICK

The European War and American Art.—The great war in Europe has reacted on American affairs in many ways but in none with quite so remarkable and important an effect as on American art. In a year that has witnessed the assembling of the paintings and other works comprising the art section of the Panama-Pacific Exposition, that has seen the opening of the Minneapolis Museum and of the George Gray Barnard Gothic Museum to the public, the addition of the Evans wing to the Boston Museum, the installation of the Riggs donation of arms and armor in the Metropolitan Museum in New York—all these are of secondary importance compared with the fact that for the first time in our history industry has turned to native art for help. What museum directors, art teachers and the rare real friends of American art have been working for through long years has come to pass at last. The art of design is being practiced here by resident (if not wholly native) craftsmen for native use.

The cause of this realization is simple. By the opening of the year 1915 firms engaged in making goods in which design was essential realized they were cut off from their usual sources of supply abroad as a result of conditions brought about by war breaking out in 1914. The designers of France had gone to the front; Germany and Austria-Hungary were barred from trade with us in this as in all other branches. Then the manufacturers of textiles, furniture makers, architects and designers, turned to the American art museums for help. Some of the museums were ready, in fact had been trying for years without avail to call the attention of such business to their resources in the way of materials for furnishing designs. But the business men had been indifferent to the opportunities offered. Foreign designs were an assured thing; native ones would be an experiment, possibly costly and unreliable, and so no heed was paid to the matter.

But with foreign sources closed the native ones had to be tested. To the Metropolitan Museum of Art in New York there came a small army of designers from places as remote as Grand Rapids, Cleveland and Cincinnati, to study designs for furniture, textiles, lamps, architectural and ecclesiastical subjects, every one of which was for practical use. Moreover, the silk weavers of Paterson, N. J., went to the art museums for help in getting up an historical textiles exhibition in connection with the first annual Silk Convention held in that city (Oct. 12-31). As a result of this it is probable that Paterson, the greatest silk manufacturing city in the United States, will in the near future have a permanent textile museum modeled after the famous one in Lyons, France. The furniture manufacturers of Grand Rapids, Mich., also were discussing the establishment of a museum devoted to their craft.

The war closed all the art auction centers abroad with the exception of London where a few small sales were held. New York loomed up as the only important art auction center of the world. Although the few indifferent collections sent from Europe for sale met with poor financial results, there was a better story to tell when the Ichabod T. Williams paintings and the Brayton Ives collection of prints were sold by the American Art Association in February and April. In fact the Brayton Ives prints, with a total of $290,819.50 for

1,029 items established a world's record for such a sale.

Museums.—In spite of the fact that financial conditions were not of the best throughout the year, the impetus of museum plans already under way was sufficiently powerful to overcome this drawback, with the result that 1915 marked an extremely important advance in the museums. The most important addition to the art museums of the United States, although it is probably the smallest in the country, is the George Gray Barnard Cloisters on Fort Washington Heights in New York City, built by Mr. Barnard to exhibit a remarkable collection of Gothic sculptures and architectural fragments. In addition to housing the sculptures, the building is designed to incorporate in its structure and surroundings objects of Gothic art that will represent as nearly as possible their original conditions, and although the building was only a year old it already had a favorable effect on the plans of two American museums, built or building. Opened originally in December, 1914, an admission fee for a French war charity was charged until ten months later, the Cloisters being thrown open to the public in October. The museum was not only built and supported by Mr. Barnard, but its entire collection was supplied by him.

The most valuable acquisition of any of our museums for the year was the Riggs donation of arms and armor, comprising 2,500 pieces, first shown to the public in the Metropolitan Museum in January. It fills three large halls in the museum, shows the evolution of armor from the fourteenth to the eighteenth centuries, and aside from its general beauty and completeness has objects of technical interest such as can be seen in no other collection in the world. The museum lost, during the year, three important sections of the famous Morgan loan collection, the Chinese porcelains, Fragonard panels and the eighteenth century furniture, the last two groups of objects having been purchased by Henry Clay Frick for his New York residence.

To the Boston Museum of Fine Arts there was added, and formally opened in February, the Robert Dawson Evans Memorial Galleries for Paintings, a gift of Mrs. M. A. Evans. In addition to adding 12 picture galleries and a tapestry hall on the main floor and a lecture hall and gallery for water colors on the ground floor, the new wing affords room for a complete and practical installation for the department of prints, which numbers eighty thousand engravings and has 11 rooms at its disposal. No such opportunity to study prints from their beginning to contemporary times is afforded by any art museum in America. The opening of this department is one of the most significant features of museum management in the history of such institutions in our country.

The Minneapolis Institute of Arts formally opened its new building on Jan. 7, the present building being a handsome classical structure but only one-seventh of the projected size of the completed museum. It has three floors devoted to galleries, wholly or in part, and the opening exhibition included sculptures, paintings and other objects partly made up of loans from public and private collections. In addition to this the museum was offered a gift of $25,000 for a separate building for its art school, with an additional gift of $2,500 a year for three years to pay the salary of a director.

Among the other events in the museum world were the opening of the art museum of Vassar College in May; the establishment of the French Museum in the Scribner Building in New York in June; the gift of 41 paintings and sculptures, valued at $500,000, by Mrs. C. H. Hyams to the Delgado Museum in New Orleans; the holding of a Clay Products Exhibition by the Newark, N. J., Museum Association; and the gift of 82 sketches by contemporary artists from the people of the French Republic to the National Gallery in Washington.

Exhibitions.—The Panama-Pacific Exposition was officially open Feb. 20 to Dec. 4, and its paintings, murals and sculptures were the dominant factor in the exhibition world of 1915. The sculptures were the most successful feature of the American section, for both in masses and detail they added much to the wonderful beauty

of the exhibition buildings and courts. In the 120 galleries of the Fine Arts Palace the United States exhibits occupied about two-thirds of the space, Japan having ten rooms, France seven, Italy four, Sweden eight, Holland four, China and Portugal three each, Uruguay, Cuba, the Philippines and the Argentine one each, with the Hungarian and other exhibits placed in an annex. Grand prizes were awarded to Frederic Carl Frieseke and Henry Wolf of New York, and a grand International prize to Frank Duveneck of Cincinnati. Medals of honor were given to 15 painters, three sculptors, two etchers and engravers. Gold medals went to 69 painters, sculptors and etchers. Silver medals were awarded to 171 painters and sculptors. Bronze medals went to 81 painters and sculptors. The exhibition in the Fine Arts Palace is to remain open until May 1, 1916.

The Spring Exhibition of the National Academy of Design (March 19-April 25) was free to the public; the Winter Exhibition opening on Dec. 17 with C. W. Hawthorne taking the first Altman prize and the Isidor medal; Daniel Garber, the second Altman prize; Cecelia Beaux, the Proctor prize; Paul Dougherty, the Carnegie prize; and Paul Herzel, the Barnet prize for sculpture. The Independent Artists of Chicago held a "pay for space" show Aug. 2 to 28. The tenth annual exhibition of current paintings by American artists was held in the St. Louis City Art Museum (Sept. 1 to Nov. 1) with 175 canvases. The Peabody Gallery, Baltimore, adopted the "group" idea in an exhibition Oct. 1 to Dec. 31. The MacDowell Club, New York, opened its season of group exhibitions on Oct. 31. The twenty-eighth annual exhibition of paintings and sculptures opened in the Art Institute of Chicago on Nov. 16. J. Alden Weir was awarded the Potter Palmer gold medal; and other prize winners were: Joseph T. Pearson, Jr., George Ballows, and W. Victor Higgins. The Brooklyn Institute varied metropolitan routine in such matters by holding an "Invitation Show" in April with a hundred pictures, several of which were purchased by the institution out of a subscription fund, and exhibited 69 water colors by Winslow Homer (Oct. 16 to Nov. 7).

A feature of the year was the number of loan exhibitions, chiefly in New York, for the benefit of sufferers from the European War. In the Knoedler Galleries in January there were shown two groups of paintings by Goya and El Greco of an extraordinary quality. In March there was assembled in the former private gallery of Benjamin Altman a collection of 58 canvases which included great works of the Italian Renaissance. British, French and Flemish schools, with one canvas by Inness. In April the Knoedler Galleries again sheltered a loan collection made up of two important groups by Degas and Mary Cassatt, with some by the old masters. By way of return for one of these charity art shows, the artists of France contributed more than a hundred pictures and sculptures to be sent to this country and presented to the American artists who gave their works to the Knoedler war relief sale in 1914.

Sculpture.—The most constructive piece of official criticism of the year was concerned with sculpture. In January the Municipal Art Commission of New York rejected Frederick MacMonnies' design for the Angela Crane fountain in City Hall Park for the reason that "it bore no relation to the City Hall either artistically or structurally." MacMonnies was invited to submit another sketch and when he returned to New York from France in October he stated he was at work on a new design in collaboration with Thomas Hastings, architect.

Among the new works emplaced during the year were Karl Bitter's bronze statue of Andrew J. White at Cornell University, June 16; Francis Herman Packer's bronze equestrian statue of Gen. Nathaniel Greene, Greensboro, N. C., July 3; Daniel Chester French's Wendell Phillips, Boston, July 5; Gutzon Borglum's Gov. John P. Altgeld, Chicago, Ill., Sept. 6; Edward C. Potter's mounted bugler Soldiers' Monument, Brookline, Mass., Oct. 9; J. Massey Rhind's bronze statute of Gen. Alexander Stewart Webb, Gettysburg, Oct. 12; Anna Vaughn Hyatt's Joan of Arc,

New York, Dec. 6. The notorious "Linton Aphrodite" was brought back to America and is in the garden of John D. Rockefeller's country estate in Pocantico Hills, New York. The War Department announced an open competition, with three cash prizes, for a design for a Francis Scott Key Memorial at Fort McHenry, near Baltimore, the competition to close on Dec. 15.

The medallic art of the country was increased by two official medals in 1915. The Panama-Pacific Exposition medal was designed by Robert I. Aitken. Mobray Clarke modeled the medal to commemorate the hundred years of peace between the United States and Great Britain. The National Archery Association had a prize medal designed by Cyrus E. Dallin. The Washington Society of Artists had a new award medal by N. S. Dunbar; and the Chicago Society of Artists had another new award medal by Julia Bracken Wendt. Commodore Barry of the U. S. Navy is commemorated in a new portrait medal by J. Beach.

The American Numismatic Society issued a circular in February asking artists who have done medallic work to furnish complete lists of the same for the Society's archives and to contribute works to form a permanent exhibition of contemporary medals, plaques and small reliefs.

Handicrafts.—The Clay Products Exhibition (Feb. 15 to March 14) and the Historical Exhibition of Textiles (Oct. 12-31) held in Newark, N. J., were helpful signs of a growth of wholesome interest in the arts by the industries. The Smithsonian Institution, in Washington, D. C., aided this movement by assembling an exhibition of textile machinery to show the progress of the craft of weaving from ancient times to the day of the modern loom. In the National Museum, in Washington, was also shown a model exhibit of artistic American industrial skill (May 12 to 14), shown later in the year in Columbia University, New York.

The Handicraft Club of Baltimore held an exhibition in the Peabody Institute in April, the feature of which was a collection of chairs covering a period of 125 years but chiefly selected to show the art of the chairmaker. The Society of Arts and Crafts of Boston held its annual show (Oct. 15 to 28) in the Boston City Club. The Chicago Arts and Crafts annual exhibition was held in the Chicago Institute in October, and the National Society of Craftmen held its annual exhibition (Dec. 8 to 31) in the National Arts Club, New York.

Necrology.—Death took from the ranks of American artists several prominent figures in the year 1915. Chief of these, as a man and as a constructive force in our national art life was John White Alexander, who died in New York on May 31 in his sixtieth year. Besides being remembered for his portraits and mural paintings, Alexander will always remain a great figure in our native art history owing to the efforts he made to help the growth of art education in the schools.

Roswell Morse Shurtleff, N. A., died on Jan. 6, aged 76. In addition to the regard he won as a painter of Adirondack scenery, he also earned a reputation for gallantry as a soldier in the Rebellion. In March died Theodore M. Davis, American Egyptologist, who bequeathed his art collection (including Rembrandt's "Sibyl") to the Metropolitan Museum of Art, although his will is the subject of legal action. F. Hopkinson Smith died on April 7 in New York, aged 77 years.

Karl Bitter, sculptor, was killed on April 10 in an automobile accident in New York. He was 48 years old and leaves as his finest work the bronze Astor Memorial doors in Trinity Church, New York. The Pulitzer fountain in the Central Park Plaza is also his work, and the last of his sculptures to be publicly exhibited was his seated figure of Thomas Jefferson for the University of Virginia, seen in the 1915 Architectural League show in New York. Arthur Hoeber, painter and critic, died in Nutley, N. J., in April in his sixty-first year.

Societies.—The American Federation of Arts held its sixth annual convention in Washington, May 12 to 14. "Art Education" was the general topic, with special reference to cultural and industrial development.

In March there was organized in New York, through the initiative of

C. S. Pietro, an Italian sculptor domiciled in that city, a society called Friends of the Young Artists, for the purpose of helping unknown and young artists by holding frequent competitions with money prizes for awards. Three competitions have thus far been held: one in March for sculptors with $450 distributed in 13 prizes; one in June for painters with the same amount of prize money distributed in the same proportion; the third in September for architects.

J. Alden Weir was elected president of the National Academy of Design, to succeed John W. Alexander, on April 28. Herbert Adams was appointed president of the Federal Fine Arts Commission, to succeed Daniel Chester French, on July 17.

ARCHITECTURE

E. R. Bossange

Tendencies in American Architecture.—The United States seems to be going through the usual phases in the development of a national style or manner in architecture. We are just emerging from the first period of slavish copying and imitation, during which our architects experimented with many styles. There has been undoubtedly more copying in this country than ever before in architectural history, and much of it unfortunately is inappropriate. Perhaps in reaction against the newness of practical things, of society and the primeval state of nature; perhaps because our art education has emphasized the study of the old rather than appreciation of the modern; possibly because it is so much easier to verify the accuracy of a copy than to judge the merits of a novelty, by far the greater part of our work has been imitative in character rather than original or creative. The period of imitation in architecture has been proportionally longer, compared with our progress in other fields, than in any other land. In some cases, on the other hand, originality has been forced upon our architects by circumstances; that is, the climate, the building materials, the use to which the building was to be put, were so different that a copy could not serve. In such cases either original solutions were attempted and new forms, materials and ornaments created, or else the modifications were more radical and more rapid. Thus we have two great tendencies or methods in our architecture, one imitative and the other creative. Either system, developed to the point of truly and beautifully expressing the facts, will produce a national art, and they will arrive at similar results. The first, the imitative, is by far the safer method to follow, for with examples tested by the ages to guide us, many mistakes and much bad taste are avoided. The second method, attempting to produce original form, to express our new needs, often results in ugliness and failure, but it does encourage originality and develops the creative instinct. The contributions of each of these methods or schools are valuable, each is necessary, and it is to be regretted that the leaders of the two movements have so little respect or tolerance for each other.

The work of the year 1915 shows a distinct movement towards a more logical selection of models or sources of inspiration and a more complete adaptation to present needs. It is not so much that we imitate less, but better judgment is shown in the selection of the period to copy. The imitation is much more discriminatingly done and the environment is carefully considered and developed to produce a suitable frame. In fact, the desire to harmonize the surroundings and to give the color and surface of all materials mellowness and variety and so hide the newness of the buildings is perhaps the most marked characteristic of the day. In painting we have the most ingenious search for "quality," for texture, vibration, and broken color. In architecture this movement results in bricks of charming texture, slates with rough faces and edges; tiles, terra cottas, cements and concretes treated in all sorts of ways to produce surfaces and colors that are not monotonous and that do not look new. This is true not only in country houses, in small buildings, such as the charming Parrish Museum

in Southhampton, N. Y., and the Three Arts Building in Chicago, but also in the largest structures and even in exhibition buildings.

The Panama-Pacific Exposition.—The most notable architectural contribution of the year so far as ideas are concerned is the buildings of the expositions held at San Francisco and San Diego. The first of these was conceived in quite a different way from the Chicago, Buffalo or St. Louis expositions. In fact, one can almost say, the old "parti" or general scheme was reversed. Instead of a group of buildings related but independent, each having definite proportions and a mass of its own, we have an aggregation of constructions the shapes of which count but little. For it was the spaces or courts left between the buildings that was considered and not the buildings themselves. Having adopted this scheme it was necessary to develop the treatment and decoration of the courts to such an extent that the architecture of the buildings themselves would be secondary. This was accomplished by means of decorative architecture and by giving very special study to the color and texture of surfaces.

In style the buildings of the Panama-Pacific Exposition differed greatly and often were not harmonious, but it mattered little, for here we are not concerned so much with ensemble and the proportion and distribution of masses as with the charm of the immediate surroundings and the character of the more intimate enclosed or semi-enclosed courts. It is to be doubted if the search for decorative effect of exteriors has ever been pushed as far as it is here. For instance, we find great surfaces of artificial travertine, this material being chosen as model because of its exceptionally interesting character. The fact that such a surface is not an appropriate surface for artificial material, as it does not express the nature of it and makes the surface less durable, was ignored for the sake of the effect. We find admirably imitated stonework painted and covered with patterns and the expression of strength destroyed by the decorative color and texture effects produced. Of course, it may be argued that exhibition buildings, being temporary affairs, have more the character of stage scenery than of permanent constructions, and that if the eye is charmed and at the same time the wind and rain kept out, the problem is properly solved. That was evidently the point of view adopted here. It seems that this conception of architecture is more than a local or temporary one, and that, as has been abundantly shown in the past, we are willing to sacrifice consistency and truth to pleasing effects and externals.

The influence which these color and texture effects, applied regardless of architectural form, construction, material or use, will have on our decoration and our architecture will be most interesting, but the writer does not hesitate to say that what is gained in decoration may be somewhat offset by what is lost in architecture, unless the principles involved are clearly understood. This reservation having been made it is delightful to stop fault-finding and to admire the color sense, the imagination, and the ingenuity displayed in the San Francisco Exposition. Deep and brilliant colors were used and strong contrasts produced, but all were mellowed down to the decoration key by broken surfaces and varied textures so cleverly studied that they were a delight to behold. These buildings will be a valuable source of suggestions for color effects and surface treatments and in that respect mark a definite forward step in the direction of originality rather than imitation. After this display of the possibilities of color and texture, it is to be doubted if in the future we shall accept large areas of monotonous surfaces and flat colors. The pleasures that "quality" can produce having once been experienced, a taste and desire is developed that must be satisfied. That is the great lesson of the San Francisco Exposition.

Without attempting to describe in detail the various courts and buildings, one or two that have a marked quality may be mentioned. The collonades in front of the Palace of Fine Arts and the lagoon and gardens were arranged in a most interesting and imposing manner and displayed a de-

lightful imaginative quality. Turning to a work of an entirely different character we are struck by the charming playful character of the design and of the details of the Horticultural Palace. The architect disregarded somewhat the conventional constructive forms of the past and produced an ensemble which by the details and color effects was truly festive and frankly temporary. Very "modern French" in character, it did not harmonize well with the other buildings and the virile and strong ornament made the delicate character of the Festival Hall seem somewhat thin. This lack of architectural harmony, frequent in the exposition buildings, was hidden by the charming color effects to such an extent that it makes one wonder if color is not more important than form. For interior furnishings this is probably true. The treatment of the interiors of Mrs. Gardner's palace in Boston seems to prove this beyond question, for there we find examples of all periods brought together without regard to style, character or scale, and yet, because they are arranged with a wonderful sense of color, harmonies are produced that are perfectly satisfactory and delightful to look at.

The Court of Abundance was interesting because of its originality, and originality was here developed to the point of not looking new, in fact, was so consistent and harmonious in form and detail that it looked more "arrived," as the French would say, than some of the mixtures of styles we find elsewhere. The Court of the Universe was also most interesting and was executed with that care for detail that has characterized the work of its architects for many years. The attempt to take suggestions from several sources, however, was a somewhat new departure and the adaptations did not seem to have been carried quite far enough to produce perfect harmony.

The San Diego Exposition.—The buildings of the San Diego Exposition were conceived in a different spirit from those described above. One style pervades the whole composition and although adapted and modified in various manners, produced a harmonious architectural whole. The general character was more architectural and less decorative in spirit than is the case at the San Francisco Exposition. The materials were more frankly used and were less disguised by color. Textures were carefully studied so as to produce the effect of old work but not in a way to hide or modify the nature of the materials. On the other hand, these buildings were more imitative in character, it was the charm of the past that was here reproduced for our enjoyment. The naïve mistakes of construction and composition are not corrected, the architecture is not only frankly but proudly imitative. The modern practical spirit and all attempts at originality were carefully avoided, yet the whole was conceived with a very modern sense of composition. The approach over the bridge and the massing of the buildings were admirably arranged and conceived. Here the best kind of picturesque was achieved by fine masses and the appropriate selection of models, producing the impression of natural growth rather than of a conscious copy.

Notable Buildings of the Year.—The new Post Office in Washington, one of the notable buildings of the year, is, in style, an example of adapted classic, massive, dignified and severely correct in its details and motives. It seems, perhaps, somewhat too impressive for the use to which it is put. This discrepancy is felt when we note, for instance, the classic spirit of the columns and the utilitarianism of the windows. This brings up a question of point of view. Many of our architects have worked on the principle that by making their buildings as impressive, as beautiful and as grand as possible, regardless of use, they achieve the best results. The waiting room of the Pennsylvania Station in New York is a magnificent example of this. It is part of a railroad station and yet, we find there a dignity and solemnity that makes our civic structures and even our churches and cathedrals seem by contrast less sacred and more temporal. If we have a bank to build, should we make it as grand as architectural forms permit by using a dome, a pediment and a classic order, or shall we deliberately make a practical, economical structure with a commercial char-

acter? We have advocates of each method. The first attitude results from the imitative method and the second from the creative. Each has its merits, each has richly contributed to our art, each is justified at certain times.

Another structure of particular interest is the new Yale Club in New York City. Thoroughly modern in conception and arrangement, the dining rooms are placed 20 or more stories from the street, and the swimming pool lifted above its usual place in the basement to a location near the bedroom floors. For the interior decorations various styles have been selected, appropriate in character and cleverly adapted. The building is creative as to general conception and imitative as to interior treatment.

The house of Stuart Duncan at Newport, R. I., is an interesting example of the imitative method and one of the successful country houses of the year. Wood, stone, brick, slate, glass, iron all have been so carefully selected and ingeniously treated that it is hard to realize the structure is new. The plan also has the haphazard, accidental character that gives the early English manor house much of its charm. These naïve effects which seem so simple are most difficult to produce consciously with our modern prejudices, inherited or acquired, for axes, symmetry, circulation, compactness and convenience.

Among other important and successful buildings of the year are the Harvard Library at Cambridge, Gilman Hall of Johns Hopkins University, and the wards and other structures of the Burke Relief Foundation at White Plains, New York.

Commercial Structures.—The recent structures of a purely utilitarian character, such as factories, storehouses and commercial buildings, show a most serious effort on the part of their designers to find an appropriate architectural expression for the practical requirements of these problems which the engineer and efficiency experts have already successfully solved. It is now the turn of the artist to do his share. In these buildings originality has been more or less forced on the architects, for the conditions differed too much to permit of mere adaptation of classic forms. The need of huge windows with metal frames, concentrated supports, flat roofs or skylights, cornices suppressed to gain light, moldings omitted for economy and cleanliness, has resulted in structures of a new type, frequently ugly, it must be admitted, but nevertheless most useful experiments. The modifications of the cornice to suit modern requirements is an interesting development of the day, and so is the decorative treatment of walls which are no longer supports but merely filling in or protective panelling.

LANDSCAPE ARCHITECTURE

JOHN NOLEN

Organizations. — The competition for the fellowship of the American Society of Landscape Architects at the American Academy at Rome was won by Edward G. Lawson of Cornell University, selecting Bremer W. Pond of Harvard as alternate. The successful candidate probably will not be sent this year on account of war conditions. The publication of *The City Plan*, a quarterly, was begun in March by the National Conference on City Planning. The National Academy of Arborists has organized for the purpose of maintaining the practical arboriculture and landscape forestry of the country on the highest professional basis.

National Work.—Preliminary plans for an appropriate village for Yosemite National Park have been prepared by Mark Daniels, general superintendent of landscape engineering for national parks. Associated with him as consulting architects in the revision and perfection of plans are Louis C. Mullgardt and L. P. Hobart. The final plans will be submitted to National Fine Arts Commission. The American Civic Association has organized an active committee to provide a National Park Service as part of Department of the Interior. "Get America ready to be seen" is the slogan of the chairman, Enos Mills, Estes Park, Colo. During the summer

600,000 easterners traveled to the Far West, and it is estimated that they averaged one visit each to at least one of the 14 national parks. The addition of new parks is being urged, *e. g.*, the Grand Canyon of Arizona.

Record of Public Work.—Among the important public works completed or in process are the following: the completion of plans for the park and boulevard system for Springfield, Mo.; new park being laid out at Abingdon, Ill.; adoption of the Kessler plan for improvement of Lake Cliff Park, Dallas, Tex., the plan providing for a large swimming pool; $350,000 to be spent in the improvement of Swope Park, Kansas City, Mo.; Jitney Park, the "kids'" own park, managed by boys and girls in congested districts, Pittsburgh; school gardens made from unsightly vacant lots, and agriculture made part of regular school curriculum in Portland, Ore.; public park for negroes started by negro citizens at Temple, Tex.; Union Station Park, Galveston, Tex.; Straus Fountain Memorial unveiled in Straus Park, New York City; park systems outlined for Bridgeport, Conn., and Sacramento, Cal.; considerable land developed for park purposes at Houston, Tex.; new athletic park under construction on Texas and Pacific Reservation at Fort Worth, Tex.; development of Mystic Valley Reservation in Medford, Mass., progressing; five new parks in Chicago equipped with playground and outdoor gymnasium apparatus. (See also VII, *Municipal Government.*)

Competitions and Exhibitions.—Two important competitions of the year were the competition for the intersection of Forty-second Street and Fifth Avenue, New York, under the auspices of the Municipal Art Society, New York, and the competition for an entrance to Schenley Park from Grant Boulevard, Pittsburgh. The exhibition of the Boston Society of Landscape Architects held at the Boston City Club, Feb. 16 to March 2, is of particular interest as being the first exhibition solely of works of landscape architecture held by the profession in the United States.

International Expositions. — The greatest works of landscape architecture reaching completion during the year were the California Expositions, the Panama-Pacific at San Francisco, and the Panama-California at San Diego, both in commemoration of the opening of the Panama Canal. At San Francisco a salt marsh used as a city's dumping ground was transformed into a fairy-land of tropical beauty. It covers 635 acres of ground on the southern shore of San Francisco Bay, just inside the famous Golden Gate. The general architectural scheme of the Exposition was marked by three groupings: the central group comprising eleven main exhibit palaces and Festival Hall; the western group, the pavilions of the foreign nations and the buildings of the states; and the eastern group, the amusement zone. The block plan for laying out the Exposition was adopted by an architectural commission of eight members, each of whom was made responsible for the design of some one architectural feature required in the scheme. The most favorable general comment was given to the Palace of Fine Arts by R. H. Maybeck, San Francisco, and the Court of Abundance by Louis Christian Mullgardt, San Francisco. The color scheme was in charge of Jules Guerin, New York; the illumination, W. D'Arcy Ryan, San Francisco; the landscape gardening, John McLaren, San Francisco. The Exposition opened on Feb. 20 and closed Dec. 4.

The Panama-California Exposition at San Diego was devoted mainly to the great Southwest, and to the work of the School of American Archeology and the Archeological Institute of America. The general plan for the Exposition was first prepared by Olmsted Brothers, landscape architects, Boston, and has points of merit as a landscape plan beyond that of the Panama-Pacific Exposition. The director of work was Frank P. Allen, Jr. The principal axes are represented by the Prado, a typical Spanish or Spanish-American street, and the Plaza de Panama, around which were grouped in orderly fashion many of the principal buildings of the Exposition. These schemes illustrate the possibilities of landscape architecture in its application to California cities. The buildings were located in Balboa Park, the

great public park of the city, and were in the appropriate Spanish Colonial or Mission style of architecture. The California quadrangle comprises permanent buildings surrounding the Plaza de California. Its architecture, furnishing the key-note of the Exposition, was the work of Bertram G. Goodhue, New York. Among other characteristic exhibits mention should be made of the Model Intensive Farm, a five-acre tract with model bungalow, demonstrating the possibilities of California life. The Panama-California Exposition opened on Jan. 1, and continued throughout the year. (See also *Architecture, supra.*)

Bibliography.—The principal publications of the year in the field of landscape architecture and city planning are:

Bennett, Edward H.—*Preliminary Plan of Detroit.* (Detroit, 1915.)

Comey, Arthur Coleman.—*Detroit Suburban Planning.* Report to the City Plan and Improvement Commission. (Detroit, 1915.)

Geddes, Patrick.—*Cities in Evolution.* (London, 1915.)

Howe, Samuel.—*American Country Homes of To-day.* (New York, 1915.)

James, Herman Gerlach.—*A Handbook of Civic Improvement.* (Austin, Tex., 1915.)

Kimball, Theodora.—*Classified List of References on City Planning.* (Boston, 1915.)

Mawson, Thomas H., & Sons (Borden Park, Ottawa, Canada).—"Report on the Development of the Estate for the Great Eastern Company." (London, 1915.)

——"Exeter of the Future; a Policy of Improvement within a Period of 100 Years." (London, 1915.)

Munro, William Bennett.—"City Planning and Public Improvements." (Ch. IV, *Bibliography of Municipal Government,* Cambridge, 1915.)

National Conference on City Planning.—*The City Plan.* Quarterly.

Nolen, John.—*Handbook of City Planning.* (New York, 1915.)

——"Preliminary Report to the City Plan Commission, Bridgeport, Conn." (Bridgeport, 1915.)

Olmsted, Frederick Law.—"Conditions in Detroit, 1915." Report to the City Plan and Improvement Commission. (Detroit, 1915.)

Olmsted Brothers.—"Report on a Parkway System for Essex County, New Jersey." (Newark, 1915.)

Parsons, Samuel.—*The Art of Landscape Architecture: Its Development and Its Application to Modern Landscape Gardening.* (New York, 1915.)

Taylor, Graham Romeyn.—*Satellite Cities; a Study of Industrial Suburbs.* (New York, 1915.)

ARCHÆOLOGY

CLASSICAL ARCHÆOLOGY

William Nickerson Bates

Progress of Research.—During the year 1915 there have been comparatively few discoveries to record in the field of classical archæology, chiefly because of the great European War which put a stop to nearly all excavation. Thus no work was done at Sardis, where Princeton University is gradually bringing to light the buildings surrounding the great temple of Artemis. So, too, the publication of archæological material in the countries engaged in the war has been very much restricted. In Greece the situation has been somewhat better, and in the autumn of 1914 the American School of Classical Studies at Athens was able to do considerable work at Corinth.

Corinth.—A fine Greek terrace wall running north and south was uncovered, which may prove to be the eastern line of the marketplace. In the best preserved part six courses of large ashlar blocks still remain above the broad lowest course. Parallel to this Greek wall, another wall was found which appears to be Roman of the best period. These walls face inward and in Roman times formed a long chamber. Within are remains of small bases for columns. More important than these walls are the sculptures unearthed by the excavators. There were found two statues, greater than life size, of members of the family of Augustus, and bearing a striking resemblance to him. They are nude, with drapery hanging over the left shoulder and down the side to a tree trunk. One is almost perfectly preserved, the left forearm and tip of the nose alone being gone. The other is broken off below the waist and both arms and the nose are missing. They have been identified provisionally as Caius and Lucius Cæsar. A third statue represented an unidentified Roman emperor. It is preserved from the neck to the knees. The figure wore an elaborate cuirass and

drapery. There was found also a perfectly preserved head of Augustus as pontifex maximus, which apparently has no connection with the torso just mentioned. The face is slightly bearded.

Reports on other excavations not previously published are now available.

Corfu.—At Corfu Dr. Doerpfeld has ascertained that the Gorgon temple measured 23.80 m. by 48.95 m. Seven triglyphs, three metopes, and two fragments of limestone reliefs which may have decorated the façade of the pronaos were found, also some pieces of a terra-cotta gutter which may have belonged to an early wooden entablature. The temple was dedicated to Artemis.

The Greeks have published many inscriptions found in recent years, especially in Thessaly, and report upon casual archæological explorations made in their newly acquired territory.

Nicopolis.—At Nicopolis the temple erected by Augustus to commemorate his victory at Actium was found to have been completely demolished in Byzantine times. It was of the Corinthian order, about 56 m. long and 23 m. wide.

In Italy E. Gàbrici has published an elaborate report upon the excavations at Cumae.

Cyprus.—A very important bilingual inscription from Amathus in Cyprus has been published by E. Sittig. It is in Greek and an unknown language which may be related to Minoan. In the latter part only the Greek proper names can be read. The terminations are like those in four other Cypriote inscriptions previously known. In the Metropolitan Museum in New York Minoan numerals have been found in a Cypriote inscription.

Museums.—A very important publication is Prof. John L. Myres' *Handbook of the Cesnola Collection of Antiquities from Cyprus* in the Metropolitan Museum. Important also is Miss G. M. A. Richter's catalogue of the bronzes in the same museum. The most interesting single object published during the year is the gold and ivory statuette of the Minoan snake goddess, acquired by the Boston Museum of Fine Arts in 1914 (published by L. D. Caskey in the *American Journal of Archæology*, 1915, p. 237ff). The figure is about 6½ in. high, of ivory decorated with gold bands about the skirt; and snakes of gold are twined about her extended arms. Another important addition to an American museum is the bronze statue of a boy acquired by the Metropolitan Museum of New York and published in the catalogue of bronzes just mentioned and elsewhere. It probably represents a member of the family of Augustus.

EPIGRAPHY

WALTER DENNISON

Greek Inscriptions.—In Division III, Sect. B, Pt. 5 of the *Publications of the Princeton University Archæological Expedition to Syria in 1904–1905 and 1909*, W. K. Prentice publishes 50 inscriptions; all are Greek except one which is a Greek and Latin bilingual.

W. Sherwood Fox at the annual meeting of the Archæological Institute of America held at Haverford reported upon a Greek inscription found in the Fayûm in Egypt. The inscription dates from about the first half of the third century B. C. and originally was probably part of a large votive stele erected in honor of some god or of the reigning Ptolemy; it contains the names doubtless of soldiers or engineers in the royal service settled in the Fayûm. The same writer publishes with comments in the *American Journal of Philology* (xxxiv, 437–450, and xxxv, 463–466) 12 Greek mummy-labels, now in the Royal Ontario Museum at Toronto; the labels are written in ink upon small strips of wood. In the *American Journal of Archæology* (xix, 63–70) W. J. Moulton publishes 11 Greek inscriptions traced with a brown mortar on the walls of a tomb near Beit Jibrin (the ancient Marissa) in Palestine. The inscriptions give the names of the occupants of the various loculi of the tomb, which was constructed toward the close of the third century B. C. In the same periodical (xix, 320–339) W. A. Oldfather publishes 19 new inscriptions from Locris including (No. 10) a long ephebic dedication of 33 lines

dating from the Roman period, and notes upon 10 previously published Locrian inscriptions. W. H. Robinson, Jr., comments in the *American Journal of Archæology* (xviii, 492–498) on a Christian mosaic inscription in Greek found on the floor of a mortuary chapel near Mount Nebo, east of the Dead Sea. The inscription, which dates from a time subsequent to Constantine, has six lines.

Latin Inscriptions.—In the *Proceedings of the American Philological Association* (xlv, xxi-xxii) appear the results of a preliminary study by G. J. Laing of the dedicants of the sacred inscriptions of the city of Rome. This study includes dedicatory inscriptions to Jupiter, Silvanus, Hercules, and Genius, the purpose being to determine to what class of society the dedicants belong and thus to show to what sections of people the respective cults appealed. Inscriptions are largely used as a source by A. R. Anderson in the *Transactions of the American Philological Association* (xlv, 129–139) to determine the use of the ending *-eis* in the accusative plural of the Latin third declension. An exhaustive study of the appearance and significance of the titles, *Augustalis*, *seviri Augustales*, and *seviri* in inscriptions is made by Lily Ross Taylor in the same periodical (231–253). The duties of these officers, the majority of whom were freedmen, were mainly, though not wholly, the maintenance of the imperial cult. Appended to the article is a list of about two thousand inscriptions from the municipalities of Italy and the western Roman Empire, showing how the cult was distributed. A continuation of the publication of the Latin inscriptions at the Johns Hopkins University appears in the *American Journal of Philology* (xxxv, 421–434). The texts of nos. 112-140 are given and commented on, the commentary having been written in part by the late H. L. Wilson and in part by R. V. D. Magoffin. The portion here published are tomb inscriptions, one (no. 119) being metrical; another (no. 129) was cut with unusual care and perhaps is as early as Augustus. In the same periodical (400–420) H. Martin presents a brief study of the forms (declensions, conjugation) and vocabulary of Roman inscriptions discovered in Spain. Under the latter heading it is seen that most of the words are taken from Christian inscriptions, whose meaning was extended from the original classic significance to express the new and spiritual concepts of the Christian faith. Thus, the vocabulary of war, of the arena, of politics, and everyday life was employed to this end; for example, *virtus* which meant "bravery" in classic Latin was extended to signify "relics." In *Old Penn* for April 20, 1915 (873–877), J. C. Rolfe publishes the text with explanatory notes of 19 Latin sepulchral inscriptions belonging to the University of Pennsylvania; they illustrate the common types. H. H. Armstrong publishes notes upon inscriptions found at Setia, southeast of Rome, in the *American Journal of Archæology* (xix, 53–56).

MUSIC

FREDERICK H. MARTENS

General Survey of the Year.—The year 1915 has been one of progress in almost every field of American endeavor. The spirit of nationalism in American music roused by the propaganda of John C. Freund, editor of *Musical America*, has gained impetus owing to extraneous circumstances tending to emphasize the American idea in American life. The past year may be said to have been one rich in creative output by American composers, notable for achievement in concert and recital field, for development in musico-technical and mechanical branches of the art, and for an increase in general appreciation and accomplishment.

Grand Opera.—The American grand opera of 1915 was Horatio Parker's *Fairyland*, libretto by Brian Hooker, *première*, Los Angeles, June 29. A work of many beauties, ripe scholarship and modern contour and orchestration, it has been accused of developing musical idealism beyond the possibility of general appreciation. The score, though rich in powerful

and original thematic concepts and marvelous contrapuntal development is somewhat weak as regards dramatic action and movement.

Operatic novelties of European origin were *Madame Sans-Gêne* and *L'Oracolo*. *L'Oracolo*, a one-act opera by Francesco Leoni (Metropolitan Opera House, Feb. 4), its libretto adapted from Chester B. Fernald's melodrama *The Cat and the Cherub*, was theatrically effective, melodious, without depth, and a good specimen of modern Italian veristic writing. A mixture of modern Italian operatic composition with more modern elements was shown in Umberto Giordano's three-act *Madame Sans-Gêne* (Metropolitan Opera House, Jan. 28), an artistic failure. Tuneful, and using French Revolutionary folk-songs to secure musical local color, general poverty of invention and lack of virile dramatic characterization make it musically insignificant. It represents a failure to rise to an unique opportunity, and settles in the negative the question whether or no Napoleon should be cast for a singing rôle in grand opera.

Repeated performances of Montemezzi's fine *L'Amore dei Tre Re* have established it as a permanent repertory number, but Borodine's noble *Prince Igor* was not heard till the end of December. Mascagni's *Iris* was revived, in performances whose success was largely due to Lucrezia Bori's interpretation of the title rôle. A revival of especial interest was that of Auber's *La Muette de Portici* (Boston Opera Company, Manhattan Opera House, New York, Oct. 25), in which Mme. Pavlova and her Russian ballet assisted, the great *ballerina* as the Dumb Girl. Its music, vivid and dramatic, and the opportunities offered the *corps de ballet* and for coloratura and choral display were well exploited. In other operas presented by this and by the Metropolitan company, the ballet has been a valuable artistic feature, and has added color and movement to the regular repertory numbers. Two new operatic scores in the amateur field also call for mention: N. Clifford Page's *The Contest of the Nations*, an "operetta with dances," developing effective folk and art dances against a beautifully conceived choral background (Chautauqua, August); and Will C. Macfarlane's Chinese operetta *Little Almond-Eyes*, containing music worthy of Sullivan.

Symphonic Music.—New symphonic works by American composers performed during 1915 included: Adolph M. Foerster's Second Suite for orchestra; John Alden Carpenter's "Adventures in a Perambulator," a suite in six movements, brilliantly scored, rich in humor and clever characterization, describing through the orchestral medium the adventures of a baby wheeled about in a perambulator by its nurse. Victor Kovlar's symphonic suite "Americana," utilizing American negro melodies and dance rhythms after the manner of Dvŏrak; a "Festival Prologue," by Frederick Stock, commemorating the quarter-centennial of the Chicago Symphony Orchestra; and David Stanley Smith's "Prince Hal" overture. Incidental music for orchestra by the same composer to Euripides' *Iphegenia in Tauris*, in Mr. and Mrs. Granville Barker's open-air presentation, was performed during the summer in the Yale Bowl; and incidental music by Walter Damrosch, for the Margaret Anglin production of *Iphegenia in Aulis* and *Medea*, in the Greek Theatre of the University of California.

A number of orchestral novelties by European composers were listed on American programmes during the year. Percy Grainger's "Molly on the Shore," "Shepherds Hey" and "Mock Morris Dance" (string orchestra); Delius' "Summer Night on the River" and "On Hearing the First Cuckoo in Spring"; Max Reger's "Variation on a Theme by Mozart"; Hugo Alfven's Symphony in E major; overture "Cyrano" by Wagenaar (Dutch); Pierre Maurice's "Pêcheur d'Islande," four tone-pictures after Loti; a *pièce d'occasion* by Saint-Saëns, "Hail California," composed for the Panama-Pacific Exposition, in which the "Marseillaise" and the "Star-Spangled Banner" are interwoven, not without effect; Scriabine's *"Poème divin,"* and Arnold Schönberg's "Pelleas and Mélisande," and his "Kammersinfonie," the last and the *"Poème divin"* two of the most iconoclastic works to be heard in this country.

Of unusual interest was the performance of Scriabine's "Prometheus" symphony in a synthetic rendering of music and colors. Despite the analogy between color and sound, this attempt to realize in practice their scientific and artistic relationship must be considered a failure in the light of the performance in question. The *tastiera per luce*, a keyboard for colored light, did not establish the connection between the music and the primary and secondary colors thrown in rapid succession across a screen. Until some system of complementary tone-colors is universally accepted, the outlook for any satisfactory artistic synthesis of the kind would appear limited.

Choral and Instrumental Music.—Notable among new choral compositions of the year was Horatio Parker's "Morven and the Grail," set to a free-form poem by Brian Hooker, an oratorio which "welds in beauty modern harmonic and modulatory tendencies with established formulas of oratorio writing." A work of brilliant imaginative scope and originality is Frank C. Bornschein's "Onowa," awarded the prize offered by the New Jersey Tri-City Music Festival Association for "the best choral work for mixed chorus and orchestra, written by an American citizen on an American subject." Other fine choral works of the year comprise: Deems Taylor's effective cantata-setting for female voices of Alfred Noyes' "The Highwayman"; William Lester's Easter cantata "The Triumph of the Greater Love" and his dramatic secular cantata for women's voices with alto solo, "The Galleons of Spain"; Frederick S. Converse's "The Peace Pipe" (mixed voices, baritone solo and orchestra); Charles Gilbert Spross' striking and effective choral ballad for male voices "The Flying Dutchman's Review"; and R. H. Prutting's setting (male chorus and baritone solo) of Rodman Drake's "The American Flag" (Sinfonia Musical Fraternity Prize). Henry Hadley's cantata (for women's voices), "The Golden Prince," should also be instanced.

Among the more important choral works by European composers heard in this country during the year were: numbers from Rubinstein's "Tower of Babel," Pierné's "Children's Crusade," Felix Nowowiejski's "Quo Vadis," S. Coleridge-Taylor's oratorio "The Atonement," Wolf-Ferrari's "Vita Nuova," Brahms' "Requiem," Bach's "Magnificat," and Enrico Bossi's "Joan of Arc" (American *première*).

The concert and recital record of the year is a distinguished one. Among its incidental developments might be instanced the playing of Leo Ornstein's "futurist" sonata for violin and piano; Frederick Delius' Concerte in C minor, by Percy Grainger, and that of a new Sonata in A major for piano of Charles Wakefield Cadman, by Claude Gotthelf; the introduction, by the Flonzaley Quartet, of Igor Stravinsky's first chamber-music composition, three short pieces in which that brilliant Russian composer develops practically some of his theories regarding the relationship of timbres; the success of Fritz Kreisler's free transcriptions and original compositions *à la Viennois*, for the violin; the widespread identification of music and musicians with war-time charity through the medium of the benefit and charity concert; and, finally, the large influx of European musicians into this country.

Among miscellaneous occurrences of interest may be instanced: the performance of a symphony for orchestra by a Mexican composer, Julian Carillo, "the herald of a new musical Monroe doctrine," and lectures delivered at Columbia University by another Mexican musician, Eduardo Gabriel, the prophet of a new theory of harmony, whose system acknowledges only two laws, "the law of lesser effort" and "the law of tonal gravity." A new departure in musico-mechanical synthesis is represented by the issue of compositions scored for "the movies," in an attempt to synchronize the music of Bach, Beethoven, Tschaikowsky, etc., with the movement of the films. Two new musical magazines must be credited to 1915. The *Concert-Program Exchange*, which announces its initial number for January, 1916, offers "a programme review of musical activity in the United States." The *Musical Quarterly*, edited by O. G. Sonneck,

whose first number appeared in January, 1915, discusses in its columns "the various problems affecting the past, present and future of musical art."

Music in Europe.—In spite of the adverse influences of war European musicians have been bravely trying to make the best of a bad situation. As in this country, the war concert predominates in all capitals. Max Schilling's new music-drama *Mona Liza,* completed by the composer while serving with the German army in the field, had its first performance in Berlin in October. Its music is said to be serious, logical, dramatic, but lacking warmth and spontaneity. Other German operatic novelties of 1915 have been Weingartner's *Dame Kobold* and Pfitzner's *Palestrina.* In the symphonic field Richard Strauss' "Alpine Symphony" (*première* in Dresden, Oct. 27), calling for an orchestra of 105 musicians and a "thunder machine," was perhaps the most important novelty of the year. German critics consider it the apex of Strauss' symphonic writing, "the only great distinctive musical memorial of the epic period whose contemporaries we are."

In Germany opera houses have been kept open during the season wherever possible: in Paris a new periodical, *La Musique pendant la Guerre,* upholds the interests of music under adverse conditions: and in London there has been a short opera season (novelty, Rachmaninoff's *Alenko,* a one-act opera, Pouschkin libretto) and many concerts. Sir Edward Elgar's symphonic prelude "Polonia" and his "Carillon," Tovey's Symphony in D, Hubert Bath's "African Suite" (on Kaffir dance themes), Ethel Smyth's overture to her opera *The Boatswain's Mate,* two preludes by Paul Corder to his unfinished opera *Rapunzel,* and the comparatively unknown Russian composer Bagrinowsky's orchestral suite, "Fantastic Miniatures," were orchestral novelties. In France music has suffered severely, though there has been a widespread recrudescence of the patriotic and war song.

In Russia new cantatas by Gretschaninow and Taneiew ("On Reading a Psalm"), a new symphony by N. Miaskowsky, and an orchestral suite by Golowanoff, said to "exploit all the orchestral technique of Strauss and Stravinsky," have been produced during the year. In Italy, the most important musical event may be said to have been a successful revival by Mascagni of Rossini's old oratorio-opera *Möise en Egitto.* Spain, among the neutral countries, has had an exceptionally active year of music. Among the new operas given in Madrid were: *Margot,* by Turina; *La Vida Breve,* and *El Amor Brujo* ("The Love Witch") by Manuel de Falla; and del Campo's *Tragedia del Beso* (founded on Dante). New symphonic music included: Turina's "Evangelio"; Rogelio Villaz' tone-poem "Las Hilanderas" (inspired by a Velasquez painting); "Hero and Leander," by de Lavina; a Symphony in A minor, by Catés, and "Judith," by de la Viña.

Literature.—The war has not been allowed to interrupt the publication of the eighth edition of Hugo Riemann's *Musik-Lexicon,* now complete in 20 parts. Books on theory include *The Evolution of Harmony,* by C. H. Kitson and, a most important work, Dr. Eagelfield Hull's *Modern Harmony, Its Explanation and Application,* which covers the last 15 years of musical development and bridges "the hiatus between previous musical theory and modern practice" in an admirable manner, illustrating its theorems with more than 400 examples drawn from the works of Debussy, Strauss, Elgar, Stravinsky, Scriabine, Scott, etc., etc. *The Musical Faculty: Its Origin and Processes,* by William Wallace, is a lucid analysis of what has been termed the "sixth sense." *Mozart's Operas* is "a critical study" by Edward Dent. *American Composers,* by Rupert Hughes, *Letters to and from Joseph Joachim,* selected and translated by Nora Bickley, *Pages from an Unwritten Diary,* by Sir Charles Villiers Stanford, Fritz Kreisler's *Four Weeks in the Trenches,* and *Some Famous Singers of the 19th Century,* by Francis Rogers, are among the biographical and autobiographical works. Essays include Lawrence Gilman's beautiful *Nature in Music, and Other Studies in the Tone-Poetry of To-day,* as well

as some delightful articles in James Huneker's *Ivory, Apes and Peacocks*. Of real cultural value is Prof. Edward Dickinson's *Music and the Higher Education*, while W. G. Rice's *Carillions of Belgium and Holland*, Harriet Brower's *Piano Mastery*, and Heinz Tiessen's *Guide to Richard Strauss' The Legend of Joseph* are interesting studies in special fields.

Necrology. — The year's mortuary list includes the names: Serge Ivanovitch Taneiew (died June 6), and Alexander Nicolaevich Scriabine (died April 27), two of the greatest among contemporary Russian composers, the first an eclectic, the second an ultra-modern; Alfredo d'Ambrosio, violin virtuoso and composer (died Jan. 2); Mme. Gerville-Réache, a leading operatic contralto (died Jan. 5); Charles Waldteufel, the most popular waltz and dance music composer during the second French empire (died Feb. 16); and Carl Goldmark, the composer of the "Sakuntala" overture and the *Queen of Sheba* (died Feb. 3). On May 7 O'Brien Butler, the "father of Irish opera" and active in the cause of Gaelic music, was drowned in the sinking of the *Lusitania*. Benjamin Lambord, a rising young American composer, died on June 9. On June 25, in New York, the famous pianist and teacher Rafael Joseffy passed away; "in the world of music he was a force whose kindly, unobtrusive influence with its artistic ideal and thoroughness will be greatly missed." On Aug. 18, Annette Essipoff, piano teacher and virtuoso at the Petrograd Conservatory (among her pupils was Ossip Gabrilowitch), died, while her former husband, the pedagogue and pianist Theodor Leschetiszky, died on Nov. 17.

Among others who have passed away were: Richard Heuberger, Viennese composer and critic, Dr. Paul Hartmann, a Franciscan monk, who has written a number of oratorios, Anton Hegner, the noted 'cellist, Rudolph Berger, the German tenor, and Christian Kriens, the Dutch composer and concert pianist.

THE DRAMA

WALTER PRICHARD EATON

The Theatrical Year.—The theatrical year in reality begins in September and ends in June, but for practical purposes the division can be made at almost any point. Since the YEAR BOOK appears at the end of the calendar year, we make our summary from Dec. 1, 1914, through the last week in Nov., 1915; whether one December or the other is included makes very little difference in the result from year to year. Our summary does not include the entire country, as it would be almost impossible to secure reliable statistics. We tabulate merely the productions in the English-speaking theatres of the Broadway district, New York, which customarily are attended by the critics. However, the theatrical fare of the nation is still so largely determined by what is produced on Broadway that this is a perfectly fair proceeding, just as a tabulation of the plays of Paris would fairly represent France.

During December, 1914, and the first eleven months of 1915 there were produced on Broadway 146 plays and musical comedies, and 28 one-act plays comprised in seven bills, or a total of 153 different evening entertainments. Of the 146 plays and musical pieces, 62 were plays of American authorship, nearly all dealing with American life and characters. Twenty were of foreign authorship or origin. Thirty-two were revivals. Thirty-two were musical comedies or spectacles, of which seven were revivals of the Gilbert and Sullivan operettas.

These figures are illuminating in light of other years. At one period in mid-winter ten years ago 60 per cent. of the Broadway attractions were musical pieces. The year 1915 shows a percentage of less than 25. A decade ago, also, and still more a quarter of a century ago, the ratio between foreign and native plays would have been quite different. Now it is three to one in favor of the native dramatist; many theatregoers can remember when it was at least three to one the other way about, or even four to one in the 'eighties. In part

the small number of foreign plays in 1915 was due to the European War and the consequent falling off of European productions, but by comparing the figures in the years just before the war began, it is safe to say that the increase in native plays during the year is only a slightly accelerated growth. The number of revivals, over 20 per cent. of the total, is superficially more encouraging than in reality, for many of them were merely of plays successful the year before and brought back for a few weeks in the following season. However, there were revivals of three of Shaw's plays, who of late has been the most popular of dramatists, three of Ibsen's, one of Henry Arthur Jones', one of Wilde's, one of Langdon Mitchell's ("The New York Idea"), and eleven of Shakespeare's, who fared ill during the year except at the hands of Robert B. Mantell. The large number of one-act plays shown (28) testifies to the life there is in this form of the drama.

Classification of Plays.—It is growing constantly more difficult, and perhaps more useless, each year, to classify the new plays under specific heads. More and more we are losing the old hard and fast lines between farce and comedy, drama and melodrama or romance. But an attempt at such classification is not without its value. Of the 62 native plays produced on Broadway, only 15 could be definitely classified as farce, and only seven as melodrama. Fourteen very fairly came under the head of comedy, and the largest number, 20, fairly under the head of drama—that is, they were plays with a serious emotional appeal. The remaining six may roughly be classed as romance, though in that division are placed such incongruous companions as "Alice in Wonderland" and "The Great Lover." There is not a single drama in verse in the 62, nor a single play which could be called a poetic drama or a fantasy except "Alice in Wonderland."

It must be admitted, too, that in spite of the preponderance of native plays on our stage, 1915 seems to have furnished few plays of which we can be proud. The general level of the 62 was mediocre. Of the better established dramatists, Augustus Thomas, Edward Sheldon, Eugene Walter, A. E. Thomas, Thompson Buchanan and George Ade furnished nothing. George M. Cohan supplied in the Autumn a rehash of his former pieces, called "Hit-the-Trail Holliday," which does not call for serious consideration. Roi Cooper Megrue, a young dramatist who has been successful in recent years, furnished a war melodrama called "Under Fire," which is merely superficial entertainment, and made the stage version of the second edition of "Potash and Perlmutter," called "Abe and Mawruss," which, however, owes its value to the shrewd observation of Montague Glass, author of the stories, and to the acting of Barney Bernard as *Abe*. Winchell Smith and Victor Mapes furnished "The Boomerang," a pleasant comedy beautifully mounted by Mr. Belasco, and their work, at least, though slight, had the stamp of style and grace.

Best Plays of the Year.—The best work of the year, however, came from less well known dramatists. Alice Brown, a skilled writer of fiction, won the $10,000 prize offered by Winthrop Ames, and her play, "Children of Earth," was beautifully produced by Mr. Ames early in the year. It proved to be a spinster drama of New England life, full of keen observation and probing character study, but on a theme that people evidently prefer to have presented in books rather than on the stage. The play failed. It was not, however, a failure that anyone concerned need feel ashamed of.

Fred. Ballard, a recent graduate of Harvard, showed a comedy called "Young America" in the Autumn, a play about a delinquent boy and his dog, which was full of wholesome feeling and whimsical and original comedy. In some ways Mr. Ballard's talent seems as promising as that of any of the younger men.

Beulah Marie Dix also had an unusual play to her credit, "Molloch," a grim picture of war. It was well mounted at the New Amsterdam Theatre in the Autumn, but it failed to attract the public. Indeed, nearly all the war plays attempted since the war began have failed, the more serious they were the quicker being their

failure. Apparently the reality is so grim people do not want more of it on the stage.

Mr. and Mrs. Frederick Hatton, of Chicago, in collaboration with Leo Ditrichstein, the actor, produced in November a play called "The Great Lover," which in reality is but another variation on the immortal Don Juan theme, in this case the Don being a great baritone who sings the rôle of *Don Giovanni* both on and off stage; his tragedy comes when he loses his voice in middle age, and can sing no more, consequently being robbed of his potent weapon to attract the ladies. The scenes are laid in the Metropolitan Opera House in New York, and Mr. Ditrichstein gives a clever performance in the leading part of *Jean Paurel*. The play is full of color and charm and romantic flavor, and is a great and deserved success.

The nearest approach to the work of the late Clyde Fitch offered during the year was "The Unchastened Woman" by Louis K. Anspacher. In this play he makes a serious and keen study of a selfish, cat-like, woman of the upper crust, whose joy in life is to attract men but who has neither the sincerity of passion nor the courage to carry her affairs to the ultimate conclusion. In the play she is contrasted with a fine, true, idealistic wife who is married to a young architect. The cat tries to get the architect away from his spouse, and the architect is not unwilling, for Mr. Anspacher has here hit on a phase of our urban life which is rich in possibilities for the writer—the boot-licking of artists and architects in order to obtain orders from the rich, and in order to achieve the soothing syrup of flattery. The title part in the play is taken by Miss Emily Stevens, and her performance is of rare excellence. Since the rise of Miss Elsie Ferguson two years ago, hers is the most hopeful development among native actors. On the whole, "The Unchastened Woman" is probably the most worthy and significant American play of 1915.

Acting.—Of acting achievements the year has been barren. Miss Stevens as the *Unchastened Woman*, Leo Ditrichstein as *Jean Paurel* in "The Great Lover," E. H. Sothern and Miss Haidee Wright in Sutro's English comedy, "The Two Virtues," Barney Bernard as *Abe Potash*, are about all that stand out with memorable vividness. Of the older players, Mrs. Fiske, Otis Skinner, George Arliss, and others of that calibre have either not appeared at all during the year, or have appeared in parts of insignificance, or in plays continuing from the former season. Of the youngsters, only Miss Stevens seems to have been touched by a coal from the high altar. There have been some good performances in foreign plays by foreign actors, notably in "Hobson's Choice," a delightful comedy from the Manchester Repertoire Theatre.

The New Stage Craft.—The year 1915, however, has not been so commonplace theatrically as the above summary of the Broadway season would seem to indicate. In that summary brief mention is made of the production of 28 one-act plays. Sixteen of those plays were acted at the Bandbox Theatre by the so-called Washington Square Players, a group of young writers, artists, actors, etc., who in the spring of the year conceived the idea of starting a theatre of their own, to produce the kind of plays they liked, in the way they liked. They began with two performances a week, with amateur actors. In the autumn they increased the number of performances to six, and began to pay their company. They have given plays from various languages, including several delightful one-act pieces written by members, and they have staged all of them in novel and interesting manner. They have shown that dramatic art for its own sake can be made to pay, and that is an important contribution.

Moreover, in 1915 Granville Barker, the English author and manager, brought to America his productions of Shaw's "Androcles and the Lion" and "The Midsummer Night's Dream," and showed them at Wallack's Theatre, where they attracted much attention. In these productions he employed the apron stage, the over-head lighting, the imaginative settings, characteristic of the new stage craft of Europe, and he did much to teach us the beauty of that craft. No

doubt as a result of his success, Ziegfeld employed Joseph Urban, a noted scene painter formerly of Vienna, to make the sets for the "Follies" in the summer, and Urban was again called on to make the sets for a big musical comedy during the Autumn, "Around the Map." In the latter piece, Urban showed at least one scene in which the modern devices of lighting and design and color were used to create an effect of astonishing beauty. Furthermore, Gertrude Hoffman produced Rheinhardt's pantomime of "Sumurun" in vaudeville in 1915, after the original manner, and David Belasco in 1915 finally and definitely abandoned the footlights on his stage. In other words, during the year, a decided advance has been made in popularizing the new stage craft in America, and therefore in hastening the day when a more artistic and imaginative setting will be given to our native plays.

Growth of Provincial Theatres.—Outside of New York City, the year has been chiefly notable, as was 1914, for the growth of theatrical institutions of local scope, which, if they continue to develop, will ultimately put various sections of the country on an independent footing and in time breed a provincial drama, as the Manchester Repertoire Theatre has developed a provincial drama in England which is the best to-day in the English-speaking world.

In the autumn, the Indianapolis Little Theatre was opened, under the direction of Samuel Eliot, Jr., a grandson of former President Eliot of Harvard. As yet the actors are all amateurs, and but two performances are given each week, but in the first two months two local plays were produced, one of a single act, one of three acts. Original plays of local authorship and interest are also being fostered and produced at the Little Theatres connected with the Universities of Minnesota and Wisconsin, with the Carnegie Institute in Pittsburgh, and at the Neighborhood Playhouse on the East Side of New York, the Prairie Theatre at Galesburg, Ill., and elsewhere. As yet these experiments are small and struggling. But they increase in number every year, and they increase in influence. The theatre, or an important part of the theatre, is slowly being taken out of the hands of Broadway speculators and restored to the rightful owners, the artists and the public.

Separation of Stage Art and Motion Pictures.—It is the custom to speak of the motion-picture "business" or the motion-picture "industry," and people will tell you that in 1915 it grew to be the fourth largest industry in America. Certainly in no year previously were so many actors of the vocal stage called away to perform before the screen. But at the close of the year it became rather clear that at least two-thirds of these actors were really unsuited to screen work, just as experiments in raising prices at the movie theatres had shown that it is practically impossible to ask as much for motion pictures as for spoken drama. The whole question of the relation between spoken and screen drama is still unsolved, to be sure, but some things are beginning to clear up. It is beginning to become apparent that the future development of the movie is along quite different lines from the spoken drama, that it will grow just in proportion as it ceases to try to imitate the stage, and follows its own bent. As a form of entertainment, not instruction, the motion picture will probably develop along lines of free, even fantastic, romance, of melodrama, and simple narrative. The stage, free from the burden of supplying these forms of entertainment, will probably concentrate more on the mission of the spoken work, which is to convey ideas and illuminate character, on the creation of the complete illusion of reality, and on the pictorial art of scene painting. The year, then, has begun to show us that the movies and the spoken drama are not so antagonistic as we at first pessimistically supposed. Time, we think, will prove to us that in reality they are two different forms of art, as different as painting and sculpture. The theatre has survived, in 1915, a great European War, a period of domestic financial depression, and the greatest expansion yet seen in the motion-picture field. If it can survive all three of these things together, it is in little danger of extinction.

XXXI. LITERATURE AND LANGUAGE

AMERICAN LITERATURE

(*Nov. 15, 1914, to Nov. 15, 1915*)

EDWARD EVERETT HALE

Novels.—The year 1915 has not been noteworthy so far as fiction is concerned. There has been no great change either in the amount of fiction produced or in the kind. There has been very little that seems to have been inspired or suggested by the great public interest of the year, the European War. There have been no extraordinary best sellers; there have been more books than usual on the best selling lists but none has attained the popularity that has often been recorded. There have been a number of novels a good deal talked of or written about, but none that has made any such impression as can be remembered of novels of recent years. The more prominent novelists have produced as a rule nothing that will change their reputation. Those who come into notice for the first time do so usually with work of an accustomed kind. Within the established lines, however, there has been much excellent work. There are not so many of the biographical novels as in some years and the best of them nowadays are apt to give us a view of surroundings as well as of personal life. Dorothy Canfield's *The Bent Twig* (Holt) is quite as remarkable for its exhibition and criticism of the intellectual life of America as it is for its development of the character of an interesting woman from a childhood in a remarkable home through the troubled seas of a life of leisure and opportunity. Miss W. S. Cather in *The Song of the Lark* (Houghton, Mifflin Co.) gives the life and training of a Swedish girl, born and brought up in a little town in Colorado, who became a great singer; the figure of the great artist is well given and the earlier environment of western life is also good, although its necessity is not so clear. Ernest Poole's *The Harbor* (Macmillans) has been much discussed as a view of the industrial and social conditions of New York City, presented under the symbol of New York Harbor and a life of one who lived by it from boyhood to manhood with constant relation to its moods and phases. Winston Churchill in *A Far Country* (Macmillans) follows his later idea of studying the main currents of the life of to-day and presents the experience of a boy who grew up to be a corporation lawyer in a great middle-western city with an important part in the politics and business affairs of the nation. Mrs. Norris's *The Story of Julia Page* (Doubleday, Page & Co.) is another excellent presentation of a life story, in this case of a girl who makes her way from a dubious half-and-half sort of society to a place among the really best people of the country, and finds there much the same sort of difficulty that her mother had found in a coarser phase of life. Theodore Dreiser pauses in his study of the American financier to give an account of a so-called artist in *The "Genius"* (Lane), a man, however, at bottom not so very unlike the man of business Mr. Dreiser has heretofore presented.

Somewhat different from these are the books which have a reminiscence of what used to be called a "problem novel." There are few books at present which are definitely devoted to any social question, so-called, although as with several which we have just mentioned there are a number which are distinctly moulded by a desire to write about some of the ideas which interest people nowadays. Of these latter one of the best is Judge Grant's *The High Priestess*

(Scribners), written with the desire to present a possible case in the current view of feminism, but not too strongly charged with that idea to lose individuality as a picture of life and character. The same may be said of Booth Tarkington's *The Turmoil* (Harpers) which gives the contrast between our American business aptitude and our interest in other matters. John Corbin's *The Edge* (Duffield) deals with the question of private rather than public economy. Miss N. W. Putnam's *The Little Missioner* (Appletons) deals with no one question but is largely modeled by ideas in politics and religion. Alice Gerstenberg's *The Conscience of Sarah Platt* (McClurg) and James Hay's *The Man Who Forgot* (Doubleday, Page & Co.) are more definite dealings with problems, one a private question and the other public, namely, temperance. Minnie J. Reynold's *The Crayon Clue* (Kennerley) is a bright and spirited story of graft and tyranny in the public schools in Bartown. Mrs. Frances Allen's *Her Wings* (Houghton, Mifflin Co.) is a semi-humorous view of the suffrage question.

Of the many books which are most remarkable for what is often called "the spirit of place," we may mention first those which present or sometimes merely try to present the life of New York City, which, so far as fiction is concerned at least, is naturally the typical big city of the country. In most cases these books give rather a superficial view of a flashy exterior, the extravagant semi-public sensational life in which the restaurant and theatre represent play and the stock exchange represents work. Such for instance is Rupert Hughes' *Empty Pockets* (Harpers), which although it begins as a detective story goes on with the idea of giving a view of New York life. Reginald W. Kauffman's *Jim* (Moffatt, Yard & Co.) gives also this dazzling, glittering side of New York life, as does Gouverneur Morris's *When My Ship Comes In* (Scribners), which also has a considerable theatrical element to it, being a story of the theft of a play. Owen Johnson's *Making Money* (Stokes) also seems to belong here. George Bronson Howard's *God's Man* (Bobbs-Merrill Co.) presents a curious understage of the same sort of thing. Robert W. Chambers' *Athalie* (Appletons) has the contrasting note of the beautiful old country place and the accompanying motive or idea of a correspondence between the spiritual and the physical life. James L. Forbes' *The Great Mirage* (Harpers) is a story of newspaper life in New York but gives strongly the idea that this hectic sensational outer life is but a bubble to be pricked by whoever would know the real life of the great city. G. Corson's *Blue Blood and Red* (Holt), a well written book of great promise, is devoted to something of the same view, although it has so little of theory and so much of life that perhaps its main idea is not sufficiently obvious. James Oppenheim's *The Beloved* (Huebsch) is a love story of Greenwich Village, showing in its manner something of a change from the author's earlier work. Therese Tyler's *The Dusty Road* (Lippincotts) is a story of uncompromising realism of Philadelphia society.

There are also, as there have been for some time, stories of local color. Of these Elsie Singmaster's *Katy Gaumer* (Houghton, Mifflin Co.) is a picture of convincing fidelity of life among the Pennsylvania Germans. Mrs. H. R. Martin's *Martha of the Mennonite Country* (Doubleday, Page & Co.) tells of one of the religious communities of the same state; Arnold Mulder's *Bram of the Five Corners* (McClurg) joins to a view of life among the Dutch communities in Michigan the consideration of a painful possibility which perhaps arises much more often than it comes to public notice. Mr. Lincoln's *Thankful's Inheritance* (Appletons) is, like most of his books, a Cape Cod story. Joseph Hergerseimer's *Mountain Blood* (Kennerley), Mrs. Paine Erskine's *A Girl of the Blue Ridge* (Little, Brown & Co.), C. N. Buck's *The Code of the Mountains* (Watt), deal in widely different ways and phases with the life of the eastern mountaineers. Several of the books otherwise mentioned have a strong element of local color, generally in the beginning, in the account of the early days of their chief figure. C. W.

Camp's *Sinister Island* (Dodd, Mead & Co.) runs into romance and mystery, and so does C. T. Jackson's *John, the Fool* (Bobbs-Merrill Co.) but of both the prevailing note is atmosphere.

These stories of place run naturally into stories of adventure, but the real story of adventure rarely gets any very true idea of locality; a touch of atmosphere or scenery is generally all that is attempted. The great West is still the scene for most of the "adventure stories," sometimes on a ranch, sometimes in a mine, sometimes on a Mexican border, sometimes as far north as Alaska and the Columbia River. One can do no more than mention the names of Ridgewell Cullom's *The Law Breakers* (Jacobs); Zane Gray's *The Lone Star Ranger* and *The Rainbow Trail* (Harpers); H. H. Knibbs' *Sundown Slim* (Houghton, Mifflin Co.); Caroline Lockhart's *The Man from the Bitter Roots* (Lippincotts); F. Lynde's *The Real Man;* H. Willsie's *Still Jim* (Stokes); these are the best of many. Here too, except that there is more to it than to the others, one would put Rex Beach's *The Heart of the Sunset* (Harpers), although it is by no means the author's best work. There are also a number of stories of adventure in Canada. Harold Bindloss' *Harding of Allenwood* (Stokes) is a story of the Saskatchewan. I. O. Curwood's *God's Country and the Woman* (Doubleday, Page & Co.) is a lively melodrama of the Canadian Northwest. R. Pocock's *The Cheerful Blackguard* (Bobbs-Merrill Co.) is a smart tale of the Canadian mounted police. S. Shaw's *A Siren of the Snows* (Little, Brown & Co.) is a tale of a puzzling case which called a secret-service agent to the far North. W. Elwood's *Guimo* (Reilly & Britton) is not exactly of adventure but of life in the Philippines. We might put here also Sinclair Lewis's *The Trail of the Hawk* (Harpers), a story of the life of Carl Ericson, a Minnesota boy who was seized with a passion for the aeroplane, a book full of good notes of American life. A few stories are directly inspired by the war: Robert W. Chambers' *Who Goes There* (Appletons); W. S. Dyer's *Pierrot; Dog of Belgium* (Doubleday, Page & Co.); A. B. Reeves' *The War Terror* (Hearst); B. E. Stevenson's *Little Comrade* (Holt); all of them interesting though none of them great. W. L. Comfort's *Red Fleece* (Doubleday, Page & Co.) carries on the idea of his earlier book on the Russia-Japanese War. P. J. Brebner's *The Turbulent Dutchess* (Little, Brown & Co.) seems like a belated and rather lonely Zenda story. We shall not even name the score or more detective stories, which show that this fascinating form has by no means lost its charm.

There are as always a considerable number of historical novels, some of considerable merit. Stewart Edward White's *The Gray Dawn* (Doubleday, Page & Co.) is chiefly a chronicle of a phase of our nation's history at a most interesting period. This is the second volume of Mr. White's series on early life in California of which the first appeared in 1914. A book of something the same kind but of narrower scope is Eleanor Atkinson's *Johnny Appleseed* (Harpers), a story of frontier life a hundred years ago when Jonathan Chapman was planting appleseeds around the bare homes of Ohio. James Lane Allen's *The Sword of Youth* (Century) is a story of the Civil War, leisurely and elaborated in style like most of the works of its author. Mary Johnston in *The Fortunes of Garin* (Houghton, Mifflin Co.) has left the American themes which first brought her into notice and presents a very good study of mediæval life in southern France in the time of the Crusades.

There are a number of books which do not fall in such obvious classes. Henry S. Harrison's *Angela's Business* (Houghton, Mifflin Co.) is, like his recent books, not without its reflection of questions and problems, but it is in the main a story of the love affairs of several young people, a lighter story than some of its author's but equally well told. Samuel Merwin's *The Honey Bee* (Bobbs-Merrill Co.) also has a reflection of current questions in its figure of Hilda Wilson, the capable business woman. She is the honey bee, the one whose life is taken up in work, who has nothing to do with other affairs of life, except we might add, in this par-

ticular story where she has new interests, curious and diverse enough to satisfy anybody. Mrs. Josephine D. Bacon's *Open Market* (Appletons), like her last book, is a commentary on married life, based upon what is really a bit of extravagance, but proceeding from such premises in a natural and convincing manner. George A. Chamberlain's *Through Stained Glass* (Century) is a book which maintains the reputation made by the author in his anonymously published *Home*. Both books have a vast range of human experience and an ability to probe human nature to considerable depths. Mrs. Gene Stratton-Porter's *Michael O'Halloran* (Doubleday, Page & Co.) is something of a variation of her earlier stories of the Limberlost. It does give us a glimpse or two of nature, but is in the main taken up in questions of city life. David Grayson's *Hempfield* (Doubleday, Page & Co.) shows us the influence of the same spirit in the lives of interesting men and women that is already familiar to readers of the author's other works. Mrs. Mary Hallock Foote's *The Valley Road* (Houghton, Mifflin Co.) is an interesting story of an engineer's family in California. There are a few books which are, as we might say, garments for ideas that the author has deeply had at heart. Will Levington Comfort's *Lot & Co.* (Doran) is a protest against the hard and grasping game of grab so current in our present life. Jack London's *The Star Rover* (Macmillans) is an adaptation of the idea of the passage of the soul through many lives, although it must be confessed that the author gives us no notion of any particular connection between the lives he recalls, so that the book is more like a series of short stories than anything else. There are not as many humorous books as in some years but we ought to mention H. C. Wilson's *Ruggles of Red Gap* (Doubleday, Page & Co.); Ruggles is an ultra English valet who in the guise of his master compares Red Gap with older civilization.

Short Stories. — The number of short stories published in the periodicals is so enormous that it is impossible to form more than a vague idea of fashions and tendencies, and the number published in collections is too small to give any real notion of the matter. Rather the best are Harvey O'Higgins' *The Adventures of Detective Barney* (Century), an amusing set of stories about a boy who studied to be a detective; Dorothy Canfield's *Hillsboro People* (Holt), a collection of excellent stories of Vermont; Mrs. Deland's *Around Old Chester* (Harpers), characteristic stories of Dr. Lavendar's people; Montague Glass's *The Competitive Nephew* (Doubleday, Page & Co.), giving us more of the world to which his earlier books introduced us; Edna Ferber's *Emma McChesney & Co.* (Stokes), some further adventures of this interesting business woman not only in business but in other fields. H. E. Porter's *Pepper* (Century) is a series of Harvard stories published under the name of Holworthy Hall. E. E. Ferris' *The Business Adventures of Billy Thomas* (Macmillans) is a number of stories on business matters, amusing and suggestive. Lucy Pratt's *Felix Tells It* (Appletons) gives the conversations of a boy showing plenty of observation though hardly the charm of *Ezekiel*. A. B. Reeves' *The War Terror* (Hearst) is a further series of the deeds of Craig Kennedy, not all about the war. George Fitch's *Homeburg Memories* (Little, Brown & Co.) are country town sketches, full of attractive memories. C. E. VanLoan's *Buck Parvin and the Movies* (Doran) is a book which would almost serve as a guide to the motion-picture business. Sewall Ford's *Shorty McCabe on the Job* (Clode) is a tale of Shorty's experience with strange bequests. This dozen books is but a drop from the bucket of short-story literature, yet it will give a notion of the general tendencies of the short story, though somewhat superior to the rest in quality.

Poetry.—The poetry of the year goes on in its escape beyond old bounds. In more senses than one it is "an extravagant and erring spirit." Both in what they say and the way they say it our poets put behind them the old poetic substance or the old poetic form or both. The most consistent and successful effort at large expression in free forms that has ap-

peared for some time is Lincoln Colcord's *Vision of War* (Macmillans), a noble view of war and the present war in relation to democracy, humanity, and a more spiritual life. Equally free in form is Edgar L. Master's *Spoon River Anthology* (Macmillans), which with remarkable originality gives a cynical and gloomy presentation of life when once it is past. It is a saturnine development of "The evil that men do lives after them," and presents with unruffled temper characters and phases of life that even fiction has not often touched. More lyric in utterance is J. G. Fletcher in *Irradiations* (Houghton, Mifflin Co.); he uses free rhythms for the expression of feelings which, if they be not universal, might certainly be, for they seem elemental in character, unconditioned by culture or custom. Fanny S. Davis in *Crack-o'Dawn* in more accustomed forms gives utterance to a sentiment which is continually being aroused out of its daily round of pleasure in nature and fancy and the world to glimpses and understandings of the larger life of God and humanity. Two popular poets may be reckoned in this group of such as would broaden the bounds of poetry, though on the surface quite different from the rest; Berton Braley in *Songs of the Workaday World* (Doran), with poems of all sorts of stray and strange men from all over the world, and Walt Mason, whose *Horse Sense* (Macmillans) has long been known to all readers of the newspapers. Edwin Markham's *Shoes of Happiness* (Doubleday, Page & Co.) contains the author's poems of a dozen years, which if it has nothing so striking as the famous "Man with the Hoe" is yet cut out of the same piece. Several other books have something of the same note, as Joyce Kilmer in his *Trees and Other Poems* (Doran) and Margaret Widdemer in *The Factories* (Winston). More of a consistent whole in its idea is Witter Bynner's *New World* (Kennerley), developed from his earlier poem, "The Immigrant." Though we can only mention a few titles, we should note the increasing interest in writing plays, more especially by Edgar Arlington Robinson in *The Porcupine* (Macmillans) and Alice Brown in *Children of Earth* (Macmillans). There are several collections of one-act plays, for example, George Middleton's *Possessions* (Holt) and Percival Wilde's *Dawn* (Holt).

Biographies.—There are a number of good biographies and autobiographies, though nothing quite as good as some of the most striking things of the last few years. In the autobiographies George Haven Putnam in *Memories of a Publisher* (Putnams) carries on the series begun in 1914 in a volume which has even more interest. Rev. Lyman Abbott in his *Reminiscences* (Houghton, Mifflin Co.) is not merely a fit record of a life full of different kinds of important work but it gives also a view of the varied scenes in which Dr. Abbott's life has been passed. Equally important and interesting, or indeed more interesting, for it is told with a never failing sense of humor, is Dr. Anna K. Shaw's *The Story of a Pioneer* (Harpers). Dr. Shaw has always been pushing ahead and this is a most interesting account of her work. William Winter's *Vagrant Memories* (Doran) is a combination of the series of reminiscences which are the fruit of a long life devoted to an interest in the stage with exceptional opportunities for knowledge of it. They are full of anecdote, comment, philosophy, appreciation, and bring back to mind the old-time great ones of the theatre in the days of William Warren and Edwin Booth. Hiram Maxim's *My Life* (McBride, Nast & Co.) is perhaps hardly a contribution to American literature, but it is a most amusing and interesting account of a man of importance. *Letters to a Friend* and *Travels in Alaska* by the late John Muir (Houghton, Mifflin Co.) continue a remarkable series of writings, of which the publishers announce there still remain others unpublished. Poultney Bigelow's *Prussian Memories* (Putnams) is a volume of vigorous criticism of recent German ideals and American practice, put in the form of reminiscences of many years spent in Germany at different times.

Of the more formal biographies the chief is W. R. Thayer's *Life of John Hay* (Houghton, Mifflin Co.) based

upon diaries and copious correspondence. It is particularly valuable for the light it throws on what were current politics ten and fifteen years ago in China and elsewhere, and its comment on contemporary statesmen. There is also a very full picture of the earlier years, and especially of John Hay's life in the White House as Secretary to Lincoln. Percy H. Epler's *Life of Clara Barton* is the first adequate account of the life of this well known figure of modern philanthropy. The book gives a full length figure; indeed it is almost an autobiography, for the original material in the hands of the author was very great. The same might be said of Wm. B. Parker's *Edward R. Sill* (Houghton, Mifflin Co.) which gives an account of the poet's own life in the poet's own words, for Sill was a great letter-writer. It was worth while to make such a picture of this fine nature that took so little pains to make himself known. We ought to mention, but can do nothing more, O. W. Firkins' *Ralph Waldo Emerson* (Houghton, Mifflin Co.); Wm. H. Dall's *Spencer F. Baird* (Lippincotts); and F. L. Bullard's attractive little sidelight on Lincoln, called *Tad and his Father* (Dodd, Mead & Co.).

Essays and Criticism.—The year has produced a number of notable collections of essays. First to be mentioned is John Burroughs' *The Breath of Life* (Houghton, Mifflin Co.), in which that great lover of nature and the open air meditates over a lifetime of observation and seeks to draw conclusions as to the secret of life. Paul E. More in the latest volumes of the Shelburne Essays, *Aristocracy and Justice* (Houghton, Mifflin Co.), presents the positive side of the argument which his last volume presented critically, the argument for what may be thought of as classicism in form and thought or at any rate something other than the individualism so current to-day in act and morals. John Jay Chapman's *Greek Genius* (Scribners) is something of an antidote to this last, though probably not so meant. But the writer is so constant in his desire to get beneath the conventionalism of pedants and people in general that his studies must be a pleasure to the individualist, even though they deal with a classic like Euripides and a standard like Shakespeare. Gerald Stanley Lee's *We* (Doubleday, Page & Co.) is an effort to show that the problem of the present day lies not so much in the conduct of nations as in the living of daily lives. There is a considerable number of books of literary or general criticism. Horace J. Bridges in *Criticisms of Life* (Houghton, Mifflin Co.) gives a number of studies of the wandering fires and blind guides of the day in a good solid book with much in it. James Huneker's *Ivory, Apes and Peacocks* is the latest collection of that author's scintilating delineations of novelties in modernity, chiefly in painting and music. Miss Amy Lowell's *Six French Poets* (Macmillans), a study of some of the poets of France of the present generation, is one of the most interesting expressions of current ideas on poetry. John Curtis Underwood's *Literature and Insurgency* (Kennerley) is made up of ten studies of recent American authors from Mark Twain to Robert W. Chambers.

MODERN LANGUAGES AND LITERATURE

ENGLISH LANGUAGE AND LITERATURE

ALBERT C. BAUGH

During 1915, as a result of the war in Europe, America has become almost the sole producer of scholarly work in the field of English philology and literature. So extensive has been the work done that it is impossible to notice here all the year's books, articles and editions of texts relating to the subject. Moreover, almost no mention can be made of the many notes on isolated details and specific points of text criticism, valuable as they are to the special student. It is only possible to indicate the general trend of American scholarship during the year.

English Philology.—Investigation of a purely philological character has been less extensive than research in the literature. Francis A. Wood has

written on "So-called Prothetic Y and W in English" (*Jour. Eng. and Ger. Phil.*), G. O. Curme has continued his discussion of "The Development of Modern Groupstress in German and English" (*ibid.*) and W. F. Bryan has published "Studies in the Dialects of the Kentish Charters in the Old English Period." J. F. Royster's "The *Do* Auxiliary—1400 to 1450" (*Mod. Phil.*), A. S. Cook's "Archaic English in the Twelfth Century" (*Scottish Hist. Rev.*), and C. H. Grandgent's "Fashion and the Broad A" (*Nation*) may also be mentioned.

Old English Literature (449-1150).—In the field of Anglo-Saxon or Old English literature very little work has been done. Mention may be made of W. W. Lawrence's "Beowulf and the Tragedy of Finnsburg" (*Pub. Mod. Lang. Assoc.*), S. Moore's "Notes on the Old English *Christ*" (*Herrig's Archiv*), and A. S. Cook's "The Date of the Old English Inscription on the Brussels Cross" (*Mod. Lang Rev.*). In view of the little that has been done in 1915 on this portion of English literature, it may be noted that in some cases American scholars who have done their best work in the period have shown a tendency to permit their interests to stray into other channels.

Middle English Literature (1150-1500).—One of the matters most needing treatment in Middle English literature has been taken up by T. A. Knott in "An Essay toward the Critical Text of the A-Version of Piers the Plowman" (*Mod. Phil.*), and the same writer has contributed a valuable discussion of "The Text of Sir Gawayne and the Green Knight" to *Mod. Lang. Notes*. Another poem by the author of "Sir Gawayne" ("Cleanness") has been discussed in a note by O. F. Emerson (*Mod. Lang. Rev.*). H. L. Creek has treated "The Author of Havelok the Dane" (*Englische Studien*), Miss G. H. Campbell has printed texts of "The Middle English *Evangelie*" (*Pub. Mod. Lang. Assoc.*), and Carleton Brown has a note on "A Homiletical Debate between Heart and Eye" (*Mod. Lang. Notes*). P. E. Kretsmann's "A Few Notes on 'The Harrowing of Hell'" (*Mod. Phil.*) and Miss A. M. Jenney's "A Further Word as to the Origin of the Old Testament Plays" (*ibid.*) treat important subjects in Middle English literature. Lydgate has had the attention of R. Withington in "Queen Margaret's Entry into London, 1445" (*Mod. Phil.*), and Skelton has been discussed in two articles by J. M. Berden (*Mod. Lang. Notes* and *Pub. Mod. Lang. Assoc.*). Recently there has appeared *A Literary Middle English Reader* edited by A. S. Cook. A work of exceptional value that has been eagerly awaited by students of Middle English literature is the bibliography by Carleton Brown of the Middle English religious and didactic literature in verse, which is about to come from the press.

As in recent years, America has again led the world in both the extent and quality of her contributions to the study of Chaucer. Most important of the year are Prof. Kittredge's volume entitled *Chaucer and His Poetry*, six lectures delivered in 1914 at Johns Hopkins University, and J. L. Lowes' article, "Chaucer and the Seven Deadly Sins" (*Pub. Mod. Lang. Assoc.*), a criticism of the views recently advanced by Tupper (especially in *ibid.*, xxix). Kittredge has also written on Chaucer's relation to Guillaume de Machaut in two articles (*Mod. Lang. Notes* and *Pub. Mod. Lang. Assoc.*), and Lowes has discussed "Chaucer and Dante's Convivio" (*Mod. Phil.*) and "The Prioress's Oath" (*Rom. Rev.*). "The Plan of the Canterbury Tales" has been treated by H. S. V. Jones (*Mod. Phil.*), while "The Position of Group C in the Canterbury Tales" has been taken up by Samuel Moore (*Pub. Mod. Lang. Assoc.*). Karl Young contributes a note on "Chaucer and the Liturgy" (*Mod. Lang. Notes*), W. O. Sypherd maintains his position as regards "The Completeness of Chaucer's House of Fame" (*Mod. Lang. Notes*), and O. F. Emerson discusses the question "What is the Parlement of Foules?" (*Jour. Eng. and Ger. Phil.*). Frederick Tupper is the author of an interesting article on "The Quarrels of the Canterbury Pilgrims" (*ibid.*), another on "The Pardoner's Tavern" (*ibid.*), and notes in *Mod. Lang. Notes*. Finally may be noted Robertson's "Elements of Realism in the

Knight's Tale" (*Jour. Eng. and Ger. Phil.*) and A. S. Cook's "Beginning the Board in Prussia" (*ibid.*).

Modern English Literature (since 1500).—The transition from the Middle English to the Modern English period is well represented by an excellent article by Ronald S. Crane on "The Vogue of Guy of Warwick from the Close of the Middle Ages to the Romantic Revival" (*Pub. Mod. Lang. Assoc.*). In sixteenth-century literature apart from the drama there has been a tendency of late in America to focus attention on Spenser. F. M. Padelford writes on "The Political, Economic and Social Views of Spenser" (*Jour. Eng. and Ger. Phil.*), and P. W. Long discusses "Spenser and Sidney" (*Anglia*) and "Spenser's 'Muiopotmos'" (*Mod. Lang. Rev.*). H. D. Gray has added "A Possible Interpretation of Lyly's *Endimion*" (*Anglia*) to the number already existing. The connection between the Elizabethan age and the classics has been touched upon by Miss H. M. Blake in "Golding's Ovid in Elizabethan Times" (*Jour. Eng. and Ger. Phil.*), and Miss C. D'Evelyn has discussed the "Sources of the Arthur Story in Chester' *Love's Martyr*" (*ibid.*). As is to be expected, the drama has received much attention. The third volume of *Representative English Comedies* under the general editorship of C. M. Gayley has appeared, and numerous articles on Shakespeare and his contemporaries have been published in the periodicals. H. D. Gray has treated "The First Quarto Hamlet" (*Mod. Lang. Rev.*) and, as regards Shakespeare's non-dramatic work, "The Arrangement and the Date of Shakespeare's Sonnets" (*Pub. Mod. Lang. Assoc.*). J. Phelps has written on "Father Parsons in Shakespeare" (*Archiv*). F. L. Schoell has discussed the relation of "George Chapman and the Italian Neo-Latinists of the Quattrocento" (*Mod. Phil.*). C. M. Gayley's book on *Francis Beaumont, Dramatist*, is significant. Of somewhat similar title is A. H. Nason's *James Shirley, Dramatist*. "The Relation of Shirley's Plays to the Elizabethan Drama" is the title of a Columbia thesis by R. S. Forsythe. A late Elizabethan play, Glapthorne's *Wit in a Constable*, has been treated specifically by D. L. Thomas (*Jour. Eng. and Ger. Phil.*). An interesting question of source has been discussed by J. S. P. Tatlock, "The Welsh 'Troilus and Cressida' and its Relation to the Elizabethan Drama" (*Mod. Lang. Rev.*), and L. Wann has considered "The Oriental in Elizabethan Drama" (*Mod. Phil.*). Finally, from among other articles may be mentioned Miss E. M. Albright's "To be Staied" (*Pub. Mod. Lang. Assoc.*), R. Withington's "The Lord Mayor's Show for 1623" (*ibid.*), and, as belonging to a later time, E. C. Baldwin's "The 'Character' in Restoration Comedy" (*ibid.*).

The eighteenth century is connected with the preceding period on its critical side by J. Routh's "The Purpose of Art as Conceived in English Literary Criticism of the Sixteenth and Seventeenth Centuries" (*Englische Studien*) and *The Rise of Classical English Criticism* (New Orleans). A collection of *Critical Essays of the Eighteenth Century, 1700–1725* has been edited by W. H. Durham. An important volume on the age of Johnson published during the year is C. B. Tinker's *The Salon and English Letters*. Articles on Swift and on the *Dunciad* of 1728 are to be found in the *Nation* and *Modern Philology* respectively.

Space permits mention of only two works bearing on the nineteenth century: S. C. Chew's *The Dramas of Lord Byron: a Critical Study* and the late Thomas R. Lounsbury's *Life and Times of Tennyson*. The latter book was the last thing Professor Lounsbury wrote before his death at the age of 77, on April 9, 1915. An indefatigable worker, the author of many important works, including three volumes of Chaucer studies, and books on Shakespeare and almost every phase of our language and literature, he was one of America's best known and most respected scholars. One other loss to American scholarship must be noted. On Nov. 14, 1914, Ewald Flügel died at his American home in California. At the time of his death he was engaged upon the monumental *Chaucer Dictionary* which he was preparing under the auspices of the Carnegie Foundation and which he had completed approximately as

far as F. His death is a great loss to Chaucerian scholarship, and it is to be sincerely hoped that a way will be found for carrying on the work to which he so tirelessly devoted himself and which has been so unfortunately left unfinished.

GERMANIC LANGUAGES AND LITERATURE

DANIEL B. SHUMWAY

German Fiction and Drama.—The anti-German feeling engendered in America by the European War does not seem to have materially diminished the interest in German literature. Hauptmann's modernization of the old *Parsival* legend has been translated by Oakley Williams (Macmillans) and the pathological character of the protagonists of his plays admirably set forth by Philo M. Buck, Jr., in the *Unpopular Review* for April. Sudermann's well known problem play *Honor* (*Die Ehre*) has been rendered into English by H. R. Bauhakhage with a preface from the pen of Barrett H. Clarke. A translation of Beyerlein's military drama *Taps* (*Zapfenstreich*), long familiar to the American public from its stage performances, has been made by A. Swickhard (Luce & Co.). Wedekind's powerful tragedy *Earth Spirit* (*Erdgeist*) has been translated by S. A. Eliot for Boni, and an admirable study of the dramatist's work with scenes from two of his plays given by Frances C. Fay in the *Drama* for August. A racy description of Hermann Bahr, the "Austrian Bernhard Shaw," and his dramas appeared in the *Forum* for March from the pen of H. F. Rubeinstein. E. Sheldon's weak melodramatic dramatization of Sudermann's novel the *Song of Songs* (*Das Hohelied der Liebe*) is severely criticized in the *Nation* of Jan. 21. R. T. Falconer has written on *German Tragedy and Its Meaning for Canada* (Univ. of Toronto Press) and E. W. Roessler on *Soliloquy in Modern German Drama* (Lemcke).

German fiction is not as well represented as the drama. The most important translation is that of Bernhard Kellermann's *Tunnel*, a capital picture of certain phases of American finance and enterprise. Richard Stratz's latest novel, *His English Wife*, has been translated by C. C. Curtius (Longmans) and unfavorably reviewed in an article on "England in Recent German Fiction" (*Living Age*, Jan. 9), as being a childish picture of English life and a glorification of German military circles. Baroness von Heyking is represented by a new edition of her *Letters Which Never Reached Him* and a new work *Lovers in Exile* (Tschun), giving an interesting view of life in China (Dutton). Adolf Schumacher has published an excellent study of *Lassalle as a Novelistic Subject of Spielhagen.*

In the field of lyric poetry some of the many German poems called forth by the war have been rendered into English in two special articles, the one "German Poets and the War" (*Review of Reviews*, Feb. 15) dealing with the work of Dehmel, Lissauer, Vierordt, Hermann Hesse, etc., and the other "German War Poets of Today," by A. L. Salmon (*Living Age*, Feb. 13), praising the work of Dehmel and translating three lyrics. Lissauer's "Chant of Hate," which has produced more sensation than any other war poem, appears in English translations in the *Outlook* (Oct. 28, 1914) and in the *Nation* (March 11, 1915). A. von Ende gives an interesting review of "Recent German Poetry" (*Nation*, Aug. 5), dealing with Karl Henschel, Max Dauthendey, Adolf Frey, Stephan George and lesser lights. An excellent translation of Dehmel's beautiful lyric "The Working Man" (*Der Arbeitsmann*) by Alice S. Blackwell appeared in the *Survey* for March 13. Anna Bunston has well treated "German Soldier Songs" in the *Living Age* for April 10. After speaking of several popular ballads she gives excellent translations of Hauff's "*Reitersmorgenlied*" and "*Soldatenmut*," of Herwegh's "*Reiterlied*," and especially of Körner's beautiful "Prayer before Battle," and points out the prominence of death in the soldiers' songs. In another admirably written article in the *Living Age* (Aug. 28), the same author treats at length the "German Idea of Death," aptly illustrating it by references to the *Nibelungenlied*, to Goethe and to various writers of the Romantic school.

The second volume of the new periodical, the *Germanistic Society Quarterly*, contains a number of well written essays on German literature. One by A. W. Porterfield discusses "Some Things We Owe to German Romanticism" (pp. 115-134). Bertha R. Coffmann concludes her study of the "Influence of English Literature on Hagedorn" (pp. 75-98). Paul R. Pope writes on "Richard Wagner's Debt to Literature" (June number). Julian S. Haskell contributes two articles on "*Quellenstudien zu Gerhart Hauptmann*," treating first "*Stauffer Bern als Urbild des Gabriel Schillings*" in the March number, and "*Der Einfluss Nietzsches auf Hauptmanns Einsame Menschen*" in the June number. More biographical in character is an interesting account of Karl Schönherr, the author of *Glaube und Heimat*, from the pen of Fr. Schönemann (*ibid*, p. 93). Chas. A. Thurber has privately issued a work on Fritz Reuter, containing some things about his life and a translation of a few of his humorous verses. Paul Carus, a well known writer on philosophical subjects, has published a very readable book on *Goethe: With Special Consideration of His Philosophy* (Open Court), in which he not only discusses Goethe's philosophy and religion, but treats of many lesser lights grouped about the central sun of German literature. E. G. Jaeck has published a study on *Mme. de Staël and the Spread of German Literature* (Oxford) and L. M. Price one on the *Attitude of Gustav Freytag and Julian Schmidt toward English Literature* (Johns Hopkins). "Dryden's Relation to Germany in the Eighteenth Century" is discussed by M. D. Baumgarten (Univ. of Nebraska).

German Philology.—In the field of German philology C. C. Mierow has rendered Jordanes' *History of the Goths* into English (Princeton Univ. Press), R. J. Kellogg has written on "Gothic Rendering of Greek Recurrents" (*Mod. Phil.*, June, 1915), C. M. Lotspeich discusses the "Physiological Aspects of Verner's Law" (*Jour. Eng. and Ger. Phil.*, xiv, 348), O. P. Rein treats of "Mixed Preterites in German" (*Hesperia*, No. 4), and H. O. Schwabe the *Semantic Development of Words for Eating and Drinking in Germanic* (Univ. of Chicago Press). More cultural in character is M. H. Haertel's study of the *Social Conditions in Southern Bavaria in the Thirteenth Century as Shown by Meier Helmbrecht* (*Trans. Wisconsin Acad. of Science, Arts and Letters*, xvii, No. 2); also Geo. M. Priest's *Germany Since 1740* (Ginn), and Ernest B. Bax' *German Culture Past and Present* (McBride, Nast & Co.).

German-American Relations.—In this field the most important publication of the year is undoubtedly E. M. Fogel's exhaustive work on the *Beliefs and Superstitions of the Pennsylvania Germans* (American Germanica Press), in which he has collected and compared over two thousand homely proverbs. Further, Preston A. Barba has published a comprehensive study of *Cooper in Germany* (Univ. of Indiana Studies, No. 2), Chas. F. Brede continues his work on the "German Drama in English on the Philadelphia Stage," bringing it down to 1822 (*German-American Annals*), and Louis C. Baker begins his similar study of the New York stage (*ibid.*). The *Narrative of Johann Carl Buettner in the American Revolution* has been issued by the University of Chicago Press, and J. A. Hoefli's experiences of a young Swiss immigrant in California and New York under the title *Erlebtes und Erstrebtes, vergilbte Tagebuch-Blätter* (Stechert).

German Texts and Teaching.—In this field as usual only the more important publications can be mentioned. The appearance of a school edition of Goethe's first novel *Werthers Leiden* by Ernst Feise (Oxford German Series) fills a long felt need. New editions of Thomas' *Hermann und Dorothea* and of Palmer's *Wilhelm Tell* have been issued by Holt. G. O. Curme has prepared an edition of Grillparzer's symbolical drama *Libussa* with an admirable introduction (Oxford). J. T. Hatfield has compiled a volume of *Shorter German Poems for Secondary Schools* (Heath). Two war stories by Liliencron, *Umzingelt* and *Der Richtungspunkt*, have been edited by W. H. David (Oxford), and three of Wildenbruch's tales under the title *Lachendes Land* by L. M. Price (*ibid.*). Ludwig von Arnim's amusing story *Der*

Tolle Invalide has been edited by A. E. Wilson (Putnams). Worthy of mention among the grammars are a new edition of Vos' *Essentials of German* (Holt) and *Eine Ausführliche Deutsche Grammatik in gedrängter Form* by Mabel L. Bishop and Florence McKinley (Heath).

In the field of teaching Charles K. Handschin has published an excellent survey of the "Facilities for Graduate Instruction in Modern Languages in the United States" (Miami Univ.). The same author deprecates the use of texts of second-rate writers for elementary language work (*Education*, May) and also tells how the report of the committee on modern language can be made helpful (*School and Society*, June 5). The school of education of the University of Illinois has published (Bull. 12) "Suggestions and References for Modern Language Teachers" by T. E. Oliver. S. M. Waxman writes on the "Teaching of the Pronunciation of Foreign Languages," in the *Educational Review* for June. C. A. Krause has issued in book form four lectures on the *Reform Method in America* which he delivered in German in the Marburg summer school (Stechert).

Swedish.—In the field of Swedish there has not been as much activity as in the last two years. The interest in Strindberg, however, is continued by the translation of a number of his stories under the title *German Lieutenant and Other Stories* (McClurg). Translations of two of Tegner's famous poems have been issued together, the one the familiar "Children of the Lord's Supper" by Longfellow, the other the "Frithiof's Saga" by W. L. Blackley (Scandinavian Classics, ii). A volume of Agnes Wergeland's posthumous poems (*Efterladte Digte*) has been published by the Free Church Book Concern. By far the most noteworthy book of the year, however, is the translation of Selma Lagerlöf's religious romance *Jerusalem*, which in masterly fashion describes the attempts of Swedish peasants to found a colony in Palestine. It is translated by Velma S. Howard with an introduction by H. G. Leach. In the field of literary criticism, A. B. Benson has traced the *Old Norse Elements in Swedish Romanticism* (Columbia Univ. Germanic Studies). K. C. Babcock has treated the *Scandinavian Element in the United States* (Univ. of Illinois Studies in the Social Sciences, iii, No. 3), and Alfred Fonkalsrud has written a work on *Scandinavians, a Social Force in America*. As usual a number of works in Swedish have been issued by the Augustana Book Co.: *Hemlös* from the German of L. Haarbeck, *Heliga Birgittas Pilgrimsfärd* by Verner von Heidenstam, *I Västerland*, a collection of prose and poetry by Oliver A. Linder, and *Pa Heidelberget* with other tales from the German. Ole E. Rolvaag's *Paa glemte veie* has been published by the Augsburg Publishing Co.

Norwegian.—Apart from a translation of Ibsen's symbolical drama *Brand* by F. E. Garrett (Everyman's Library, Dutton), modern Norwegian literature is practically not represented. In the field of literary criticism A. M. Sturtevant discusses Ibsen's comedy of adventure *Sankthansnatten* (*St. John's Eve*) in the *Journal of English and German Philology* (xv, 357). An unfavorable review of Sigurd Ibsen's social problem play *Robert Frank* as translated by Marcia K. Johnson (Scribners) appeared in the *Nation* (Feb. 11), the writer pointing out that Sigurd Ibsen possesses none of his father's dramatic ability and is much better in his previous rôle of essayist. The older literature is represented by the *Story of Griselda in Iceland* (*Kvaethi um Grisilla*) by Rögnvaldsson Thorvaldur which has been edited by Haldor Hermannsson (*Icelandica*, vii, Cornell Univ.) and by a volume of *Norse Legends* compiled by A. E. Sims and M. L. Harry (World Book Co.). G. T. Flom has treated the *Phonology of the Dialect of Aurland* (Univ. of Illinois). Revised second editions have been published of P. Groth's *Norwegian Grammar* (Stechert) and of Michelet's *First Year of Norse* (Free Church Book Concern). In the line of travel A. E. Olsen has published *The Land of the Norsemen* (Holt).

Danish.—In this field the interest in Holberg is continued by translations of three of his comedies, *Jeppe of the Hill* (*Jeppe paa Bierget*), the *Political Tinker* (*Den politisk Kan-*

destober) and *Erasmus Montanus*, by O. J. Campbell and F. Schank (Scandinavian Classics, i). The only other work of Danish literature to appear is Gjellerup's *Pilgrim Kaminita*, trans. by J. E. Logie (Dutton).

Dutch.—Dutch, which was conspicuous by its absence in 1914, is fairly well represented in 1915. A Middle Dutch legend *Beatrijs* has been edited with critical notes and a glossary by A. J. Barnouw (Philological Society's Publications, iii, Oxford). The death of the Dutch novelist Maarten Maartens, who wrote his works in English, has been the signal for appreciative notices in the *Bookman* (Sept.) and in the *Outlook* (Aug. 18). A new novel of his, *Eve, An Incident of Paradise Regained*, has been published by Dutton. In the field of lyric poetry Geertruide Vogel's poems have been rendered into English under the title of *Spring Flowers* by L. Edna Walter (Macmillans).

ROMANCE LANGUAGES AND LITERATURE

Benjamin P. Bourland

American Contributions.—Whether it be that the present European conditions are affecting the accessibility of sources, and thereby the availability of American scholars for certain forms of scientific work pursued by them of late years, the outstanding fact of the year's review of the work in the Romance territory for 1915 is the absence of any larger study of the real problems of language and literature, especially in the Old French field. In Spanish, the publication of the first volumes of Schevill and Bonilla's edition of the complete works of Cervantes marks the beginning of a very important enterprise, which is being carried out with fine scholarship; in Italian, and in the general phases of the subject, there has been no noteworthy contribution from the scholars of this country. The year's production of translation of important matter from the Romance literatures has been unusual, both in quantity and quality; *per contra*, the volume of published texts is very small.

Necrology.—Alessandro D'Ancona, born at Pisa Feb. 20, 1835, died there Nov. 8, 1914. He was for 50 years professor in the University of Pisa, and won high esteem among scholars throughout the world as one of the foremost interpreters and historians of Italian literature. Among his very numerous writings may be mentioned his *Scritti Danteschi, Studi di Letteratura Popolare, Origini del Teatro in Italia, Poesia Popolare Italiana*. He was at one time editor of the *Nazione*, at Florence, and was the founder and editor of the *Rassegna Bibliografica della Letteratura Italiana*. Rodolfo Renier, born at Treviso in 1857, died at Turin in January, 1915. At the time of his death he was professor of the comparative history of Romance literature in the University of Turin. Besides having contributed largely to the scientific development of his field, he was distinguished as co-founder and editor (with Novati) of the very important *Giornale Storico della Letteratura Italiana* and of the collection *Studi Medievali*. Paul Hervieu, of the French Academy, born at Neuilly sur Seine Sept. 2, 1857, died at Paris Oct. 28, 1915. He was educated at the Lycée Condorcet, admitted to the Paris bar, and later served in the diplomatic corps of his country. His writings include, besides several novels, a long list of plays (as *Les Tenailles*, 1895, *La Loi de l'Homme*, 1897, *La Course au Flambeau*, 1901, *L'Enigme*, 1903, *Le Dedale*, 1905, *Le Réveil*, 1907) which gained for him an undisputed place among the very best dramatic authors of his time. Heinrich Schneegans, professor of Romance philology in the University of Bonn, died Oct. 7, 1914, aged 51 years. His most distinguished work was on the French literature of the earlier Renaissance. (*Geschichte der grotesken Satire*, 1894.)

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ANCIENT LITERATURE AND PHILOLOGY

ANCIENT LITERATURE

(*Additions from Papyri*)

CLIFFORD HERSCHEL MOORE

This year brings the tenth volume of the *Oxyrhynchus Papyri,* which, like its predecessors, gives us a rich harvest of fragments from works extant and unknown. Of the theological numbers the one of most importance is 1224, part of a papyrus book of the fourth century, giving six defective columns from an uncanonical gospel. These contain some new words of Jesus, a passage dealing with the call of Peter (*cf.* Luke V, 1-10), and another passage describing the feeling of the scribes, Pharisees, and priests at seeing Jesus consorting with sinners.

The prizes among the classical fragments are those which contain poems of Sappho (1231 and 1232) and Alcaeus (1233 and 1234). No less than 56 fragments of the second century are included under 1231, most of them so mutilated as to be at present of little value. Happily the first gives us five and a half consecutive and nearly complete stanzas, portions of two poems, one of which mentions Doricha, while the second expresses the writer's longing for Anactoria; then follow half verses which coincide with PSI 123, noticed in the last issue of the YEAR BOOK (p. 765). All the fragments under 1231 are in Sapphic measure; No. 56 stood at the end of the roll and gives us the welcome information that this was the first book of Sappho's collected poems and contained 1,320 verses. No. 1232, from a roll of the third century, gives us parts of two poems. Of the first little can be determined, but the second has 20 verses on the marriage of Hector and Andromache written in the Sapphic pentameter of 14 syllables.

The portions of Alcaeus are more fragmentary. 1233 contains 34 numbers in various metres. We can detect the subjects of certain pieces: one is addressed to Melanippus on death, a second contrasts Helen and Thetis, a third is addressed to the Dioscuri, and a fourth to Aphrodite. The fragments of 1234 have scholia, one of which attests the authorship. Apparently the poems belong to the στασιωτικά. Pittacus is certainly the subject of one.

Interesting also is 1235, containing incomplete arguments to two plays of Menander the Ἱέρεια and the Ἴμβριοι. These apparently come from a work which contained outlines of all the plays. No. 1236 gives 22 known verses of Menander's *Epitrepontes* (459-480 K.) and some new verses besides; 1237 some very fragmentary lines of the same dramatist's *Colax.*

In a chrestomathy of historical and mythological matter (1241) the most interesting part to us is a list of Alexandrian librarians from Apollonius the Rhodian to Apollodorus. A second century fragment of Babrius (1249) is chiefly important for bringing the date of the poet well within the second century. A similar reduction in date is made by an early fourth century fragment of the Clitophon and Leucippe of Achilles Talius (1250). The date of the papyrus shows that the author must have written soon after 300 A. D., or at the latest within a generation of Heliodorus and not in the fifth century as Rohde or in the sixth as Schmidt believed.

The third volume of the *Papiri Greci e Latini* of the Italian Society is given chiefly to documents, but it also contains two astrological fragments edited by Fr. Boll (157,158) which are important and some epic fragments (253) modelled on Nonnius. These begin with a description of a battle between the Romans (Αὐσονίδες) and some unknown foes, but it is impossible to say that this subject is continued through the remaining pieces.

GREEK LITERATURE

William Arthur Heidel

The Year's Work in Classical Studies, 1914 (John Murray), now in its ninth year, though not of equal excellence in its several chapters, is a valuable year book. The writer of this article hopes hereafter to give a general survey of the year's work in Greek literature; at present the difficulty of obtaining books from Continental countries renders the plan impracticable. The precedent of former years will therefore be followed until the *bellum omnium contra omnes* shall have ceased.

Among the articles in American journals may be mentioned: F. G. Allinson, "Menander's *Epitrepontes*," and B. O. Foster, "The Trojan War Again" (*Am. Jour. of Philol.*); R. J. Bonner, "The Four Senates of the Boeotians"; G. M. Calhoun, "Perjury before Athenian Arbitrators"; F. H. Fobes, "Textual Problems in Aristotle's Meteorology and Mediæval Versions of Aristotle's Meteorology"; A. Shewan, "The Oneness of the Homeric Language" (*Class. Philol.*); I. M. Linforth, "Hippolytus and Humanism"; J. W. Hewitt, "The Thank-offering and Greek Religious Thought"; J. W. Cohoon, "Rhetorical Studies in the Arbitration Scene of Menander's *Epitrepontes*" (*Trans. Am. Philol. Assoc.*); C. H. Haskins, "Mediæval Versions of the Posterior Analytics"; W. A. Heidel, "Hippocratea I"; O. J. Todd, *Quo Modo Aristophanes Rem Temporalem in Fabulis Suis Tractaverit* (Harvard Studies, xxv, xxvi). Among American doctoral dissertations may be mentioned: J. W. Kern, "Ἀνὰ and κατά in Composition and with Case," and H. P. Houghton, "Moral Significance of Animals as Indicated in Greek Proverbs" (Johns Hopkins); T. A. Buenger, "Crete in Greek Tradition" (Pennsylvania); Eleanor S. Duckett, "Studies in Ennius" (Bryn Mawr).

The following volumes have appeared in the Loeb Classical Library (Macmillans): E. Cary, *Dio's Roman History*, I, II, III; B. Perrin, *Plutarch's Lives*, I, II.; H. B. Dewing, *Procopius*, I.; W. Miller, *Xenophon's Cyropædia*, I, II.

Archæology, which must keenly interest the student of Greek literature, is well represented by H. R. Hall, *Ægean Archæology* (Putnams), and especially by E. H. Minns, *Scythians and Greeks: A Survey of Ancient History and Archæology on the North Coast of the Euxine from the Danube to the Caucasus* (Putnams).

Among the books of the year dealing with history should be mentioned the second edition of J. B. Bury's admirable *History of Greece* (Macmillans), and Ida C. Thallon's *Readings in Greek History from Homer to the Battle of Chaeronea: A Collection of Extracts from the Sources* (Ginn). The latter is a scholarly book presenting in English matters of importance to the historian. W. L. Snyder's *The Military Annals of Greece* (Badger) is a book of slight merit calculated for the general public. W. S. Davis, *A Day in Old Athens* (Allyn & Bacon), presents a view of Athenian private life in the fourth century. Much more interesting and attractive is Mrs. R. C. Bosanquet's *Days in Attica* (Macmillans), which

passes in review Greek life from prehistoric times to the present.

Homer, as always, claims his share of the scholar's attention. Austin Smyth, *The Composition of the Iliad* (Longmans), seeks to show that the Iliad at one time consisted of 13,500 lines, divided into 45 sections of 300 lines each, with major divisions after the 15th and 30th of these. One had hoped that such essays had passed with a certain generation of German scholars. J. A. K. Thomson, *Studies in the Odyssey* (Clarendon Press), seeks a solution of the problems of the poem in the historical study of the myth of Odysseus, who is for the author a divinity. There is unquestionably much of value in the book; but one may be sure that this view, like others that have gone before, is but a passing phase of Greek studies.

A. B. Cook, *Zeus: A Study in Ancient Religion.* Vol. I: *Zeus, God of the Bright Sky* (Putnams), is a monumental work of unquestionable merit. The philosophy of the Greeks is well represented by three works. A. W. Benn's *The Greek Philosophers* (Dutton) appears in a second edition, much improved. J. Burnet's *Greek Philosophy*, Part I. *Thales to Plato* (Macmillans), briefly restates the author's account given in his *Early Greek Philosophy*, and adds a highly suggestive but debatable interpretation of the Sophists, Socrates, and Plato. E. Bevan's *Stoics and Sceptics* (Clarendon Press) gives in four lectures an interesting view of certain phases of later Greek thought.

The Oxford Translation of Aristotle (Clarendon Press) continues to give us valuable renderings of that important author. The year has brought forth two issues, the first containing *De Mundo*, by E. S. Foster, and *De Spiritu*, by J. F. Dobson; the second, *Magna Moralia*, by St. George Stock, *Ethica Endemia* and *De Virtutibus et Vitiis*, by J. Solomon. The latter contains also an introduction by Mr. Stock, in which he presents strong arguments for the view that the three books (*E. N.* v., vi., vii.: *E. E.* iv., v., vi.), which are common to the texts of the *Nicomachean* and the *Endemian Ethics*, belonged originally to the latter, not (as is commonly believed) to the former.

The Greek drama also receives some attention. O. R. A. Byrde, *Euripides' "Heracles"* (Clarendon Press) gives an excellent brief commentary on the play. J. E. Harry, *The Greek Tragic Poets: Emendations, Discussions, and Critical Notes* (Univ. of Cincinnati Studies, ix.) presents in collected form essays in part previously published. The book displays acumen and wide reading, but reveals also a want of sober judgment and self-criticism. R. T. Elliott, *Aristophanes' "Acharnians"* (Clarendon Press), is a work of ripe scholarship, as is also L. L. Forman, *Aristophanes' "Clouds"* (American Book Co.). The most notable book of the year in this field is J. W. White, *The Scholia on the "Aves" of Aristophanes with an Introduction on the Origin, Development, Transmission, and Extant Sources of the Old Greek Commentary on His Comedies.* The value of this work extends far beyond the scope of its immediate subject.

To Greek historical prose refer W. R. M. Lamb, *Clio Enthroned: A Study of Prose-form in Thucydides* (Putnams), and E. M. Walker, *The Hellenica Oxyrhynchia* (Clarendon Press), the former concerned with the development of historical style and ideals, the latter with a vexed question of authorship.

Prof. A. T. Robertson, who six years ago issued a valuable *Short Grammar of the Greek New Testament*, now gives us *A Grammar of the Greek New Testament in the Light of Historical Research* (Doran), which has already reached a second edition. It is a monumental work of prodigious learning, which reflects honor on American scholarship. It is easily the best book in its field.

F. W. Hall, *A Companion to Classical Texts* (Clarendon Press), is an invaluable aid to all who would concern themselves with Greek or Latin texts, and contains the best available introduction to textual criticism. Two works in the same field, issued by the Clarendon Press, come from the pen of Prof. A. C. Clark: *Recent Developments in Textual Criticism* and *The Primitive Text of the Gospels and Acts.* The former, an inaugural lecture, deals primarily with Latin,

but its method and conclusions apply equally to Greek. The latter, concerned with omissions or interpolations in certain MSS., which it subjects to an arithmetical test based on the inferred number of letters in a MS. line, has started a lively controversy which is still *sub judice*.

Prof. B. L. Gildersleeve, for nearly 40 years professor of Greek in Johns Hopkins University and recognized leader of Greek studies in America, has retired in order to husband his strength for the completion of various tasks he has set himself, but will continue to edit the *American Journal of Philology*, which he founded. Prof. Martin L. D'Ooge, for 45 years an honored instructor in Greek in the University of Michigan, and the author of several notable books, died Sept. 12.

LATIN LITERATURE

CHARLES KNAPP

Even more than usual American work in Latin literature and allied fields has consisted, in 1915, of articles in periodicals.[1] Mention should be made, however, of one book, the second edition of the *New International Encyclopedia*, edited by F. M. Colby and Talcott Williams, of which 16 volumes were issued in 1914-15. These volumes contain a very wide array of articles in the whole broad field of classical philology, including, of course, numerous important articles dealing especially with Latin literature. The revision of these articles was entrusted to C. Knapp.

A selected list of articles follows, arranged according to the Latin authors with whom they deal primarily: "A Witticism of Asinius Pollio," by G. L. Hendrickson (*AJP.*, xxxvi, 70), a fresh discussion of the famous saying of Asinius Pollio that Livy's writings were marked by *Patavinitas;* "The Year of Caesar's Birth," by M. E. Deutsch (*TAPA.*, xlv, 17), an attempt to fix, by inference, a date not determinable by direct evidence: the author decides for 100 B. C.; "Caesar, Cicero and Ferrero," by E. G. Sihler (*AJP.*, xxxv, 379; xxxvi, 19), an adverse and well founded criticism of Ferrero's well known books on Roman history; "Catullus as an Elegist," by A. L. Wheeler (*AJP.*, xxxvi, 155), an attempt to define more clearly Catullus's position in the history of Græco-Roman elegy; "An Analysis of Cicero, *Cato Maior*," by C. Knapp (*CW.*, viii, 177, 185); "The Prosecution of Milo: A Case of Homicide, with a Plea of Self-Defence," by R. W. Husband (*CW.*, viii, 146); "The Prosecution of Sextus Roscius: A Case of Parricide, with a Plea of Alibi and Nonmotive," also by R. W. Husband (*CW.*, viii, 90, 98); "On the Date of Cic. *Fam.* XI., i," also by E. T. Merrill (*CP.*, x, 241); "Cicero and Bithynicus," by E. T. Merrill (*CP.*, x, 432), an attempt to fix the dates of two letters, *Ad Familiares*, vi, 16-17, addressed to a certain Bithynicus; "Men's Names in the Writings of Cicero," by H. L. Axtell (*CP.*, x, 386), a study of men's names in the body of Cicero's writings (not in the superscriptions of his letters); "Eugippius and the Closing Years of the Province of Noricum Ripense," by C. C. Mierow (*CP.*, x, 166); "*Molle atque Facetum*," by C. N. Jackson (*HS.*, xxv, 117), a new effort to fix the meaning of this famous phrase in Horace, *Sermones* I, x, 44; "Horace, *Sermones*, I, i," by C. Knapp (*TAPA.*, xlv, 91), an attempt, by careful analysis, to trace the movement of thought in the piece as a whole, and to fix finally the meaning of various disputed passages in this *Sermo;* "The Personal References in the Satires of Horace," by Dorothy Printup (*CJ.*, xi, 112), a proof that Horace was not afraid to name the living, and to name them adversely; "Horace, Catullus and Tigellius," by B. L. Ullman (*CP.*, x, 270), an argument that Horace named only one Tigellius, and always satirically, and that Catullus and he were at one in opposition to that Tigellius, because both were, in matters of style, Atticists, Tigellius a lover of Asianism: in a word, Horace and Catullus were completely in agreement concerning the

[1] Periodicals are cited thus: *AJP., American Journal of Philology*; *CJ., Classical Journal*; *CP., Classical Philology*; *CW., Classical Weekly*; *HS., Harvard Studies*; *TAPA., Transactions of the American Philological Association.*

literary matters with which Horace, *Sermones*, I, x, deals; "Medical Allusions in the Works of St. Jerome," by A. S. Pease (*HS.*, xxv, 74); "Ovid's Experiences with Languages at Tomi," by H. S. Gehman (*CJ.*, xi, 50); "Some Sources of Comic Effect in Petronius," by K. Preston (*CP.*, x, 260); "The Tradition of Pliny's Letters," by E. T. Merrill (*CP.*, x, 8), an outline of the tradition of Pliny's letters from their first appearance to the days of the early printed editions; "The Modern Note in Seneca's Letters," by R. M. Gummere (*CP.*, x, 139); "Apragopolis, Island-Home of Ancient Lotus-Eaters," by W. B. McDaniel (*TAPA.*, xlv, 29), an argument that the island which Suetonius (*Life of Augustus*, 98, 4) calls *Apragopolis*, and places near Capri, is Monacone: the author holds that 2,000 years ago Monacone was a far larger and more attractive island, reminding us that in the same period Capri itself has sunk many feet; "Notes on Suetonius," by J. C. Rolfe (*TAPA.*, xlv, 35); "The *Tinus* in Virgil's Flora," by H. R. Fairclough (*CP.*, x, 405), a defence of *tinus* versus *pinus* as the correct reading in several passages of Virgil's *Georgics*, and an identification of the *tinus* with *Viburnum Tinus L.*; "Virgil and the Country Pastor," by C. P. Parker (*CW.*, viii, 74), an interesting analysis of the motifs of the *Georgics* of Virgil.

Less definitely connected with a particular author are the following: "Rhetorical Studies in the Arbitration Scene of Menander's *Epitrepontes*," by J. W. Cohoon (*TAPA.*, xlv, 141), of importance to students of Plautus, Terence, and especially Quintilian; "The Pastoral, Ancient and Modern," by W. P. Mustard (*CW.*, viii, 161); "Mediæval Versions of the Posterior Analytics of Aristotle," by C. H. Haskins (*HS.*, xxv, 87); "National *Exempla Virtutis* in Roman Literature," by H. W. Litchfield (*HS.*, xxv, 1), a consideration of the persons cited by various Latin writers as embodiments of national virtues, such as *aequitas, fides, pietas, fortitudo;* "The Story of the Strix: Isidorus and the Glossographers," by S. G. Oliphant (*TAPA.*, xlv, 49), a continuation of the article noted in the YEAR BOOK for 1914 (p. 767); "The Significance of the Wing-Entrance in Roman Comedy," by Eleanor F. Rambo (*CP.*, x, 411), a paper of interest to students of Plautus and Terence both; and "Ancient Appreciation of Mountain Scenery," by W. W. Hyde (*CJ.*, xi, 70), an account of the attitude of many writers, Greek and Latin both, toward mountains.

SEMITIC LANGUAGES AND LITERATURE

MORRIS JASTROW, JR.

The European War has seriously interfered with scientific activity in the field of Semitics as in other fields. This is particularly felt in the case of an international undertaking like the *Encyclopedia of Islam*, of which nothing has appeared since the summer of 1914. Other undertakings that have been announced, particularly in Germany and France, have been delayed.

In England there has been some activity, and special mention should be made of a series of volumes issued by the British Academy under the Schweich Lecture Foundation. C. H. W. Johns has published as his contribution an interesting study on the relations between *The Laws of Babylonia and the Laws of the Hebrew Peoples*, showing traces of direct borrowing by the latter; and one of the Louvain professors, Dr. A. Van Hoonacker, who was the Schweich lecturer in 1914, has given (in French) a valuable study on the Judæan Colony at Elephantine in the sixth and fifth centuries before this era, summarizing the results of the remarkable Aramaic documents found in that region. F. C. Burkitt, the well-known English scholar, has given a general survey of Jewish and Christian apocalyptists which illustrates the narrowness of the dividing line between the two divisions.

In this country the Museum of the University of Pennsylvania has been particularly active during the year. It has brought out, in the Babylonian Section, a substantial volume of Sumerian texts by Dr. Edward Chiera on *Legal and Administrative Documents from Nippur, Chiefly from the Dynasties of Isin and Larsa*, which

furnishes new material for a period hitherto poorly represented. Dr. Chiera has well under way a further series of volumes of Sumerian texts, furnishing long lists of proper names and representing school exercises carried on in the temple of Nippur thousands of years ago. In the same period is a volume of Sumerian texts of the oldest period known to us, by Prof. George A. Barton, under the title *Sumerian Business and Administrative Documents from the Earliest Times to the Dynasty of Agade.* Prof. Arthur Ungnad contributes a volume of *Babylonian Letters of the Hammurabi Period* which are as interesting as they are varied in contents. And finally, Dr. Stephen Langdon, of Oxford, has published in the same series a tablet containing, according to his interpretation, the Sumerian epic of Paradise, the Flood and the fall of man. Of the interest of the text there is no doubt, but it is questionable whether scholars will be ready to accept Dr. Langdon's somewhat fanciful interpretation.

Prof. R. W. Rogers has brought out a sixth edition of his well known *History of Babylonia and Assyria.* The new edition, largely rewritten, embodies much new material that has been added to our knowledge of various periods in Babylonian-Assyrian history; and since Professor Rogers is an unusually conscientious student who overlooks nothing, his two volumes are to be recommended as the best general work on the subject. In this connection may be mentioned also the writer's work on the *Civilization of Babylonia and Assyria,* which is an endeavor to cover in a single volume the entire subject for the general reader. Besides two chapters devoted to the excavations and to the method of decipherment, the volume contains a survey of Babylonian-Assyrian history, two chapters on the religion and the cult, a survey of commerce and law, a rather full discussion of Babylonian-Assyrian art, and copious specimens of the literature. The book, it may be added, is elaborately illustrated by reproductions of monuments bearing on all phases of the civilization.

Anton Deimel has published, under the title *Pantheon Babylonicum,* an elaborate lexicon of the names and dates found in the cuneiform inscriptions. To this compilation, which has been carried out with great care, the author has added an introduction discussing the ideas underlying proper names and cognate problems, including a comparison between Babylonian and Hebrew religious ideas.

Of a general character is the study of Johannes Petersen of the oath among the Semites, with particular reference to the Mohammedans (*Der Eid bei den Semiten*) which is to be particularly recommended to students and which will be found valuable in a comparative study of religious customs.

The splendid series of publications containing the results of the Princeton University archæological expedition to Syria has been enriched by three substantial volumes, comprising the Greek and Latin inscriptions in northern and southern Syria, by Messrs. Littman, Magie and Stuart, and also a volume of Nabataean inscriptions, by Prof. Littman of the University of Strassburg, the value of which is increased by an admirable introductory chapter outlining the character and general contents of the inscriptions and a survey of grammatical results. The texts are accompanied by brief but illuminating comments. Parallels from other languages and scripts have been abundantly introduced.

Little has appeared in the field of Arabic studies during the year. The activity of the Gibb Memorial Series has been interrupted on account of the war, but, on the other hand, the first volume has appeared in a series instituted in memory of Prof. M. J. de Goeje, the great Arabic scholar who was for so many years one of the ornaments of Leyden University. It is a publication of a text of Al-Mufaddal Ibn Salama entitled *Fakhir,* and edited by Dr. C. A. Storey. The work is an exceedingly interesting compilation of popular Arabic phrases with an indication of their origin.

Several important Arabic texts that were promised for 1915 have failed to make their appearance owing, no doubt, to the war. It may be proper to state, however, that two

important works in the field of Mohammedanism may soon be expected to appear, to wit, *Aspects of Islam*, by Professor Goldziher of the University of Budapest, now being printed by the Yale University Press, and the lectures on Mohammedanism delivered by Prof. C. Snouck Hurgronje, of the University of Leyden, in this country, in the spring of 1914. The latter volume will be published by Putnams and was in press at the end of the year.

INDO-EUROPEAN PHILOLOGY

(*Exclusive of the Germanic Languages*)

ROLAND G. KENT

General.—L. Bloomfield's "Sentence and Word" (*TAPA.*,[1] xlv, 65) argues that the sentence is the original unit of speech, and that the progress is from an associational articulation of the utterance toward a structure in which there is an apperception of the separate elements. A. W. McWhorter, in "Notes in Syntax: Verb Function" (*PAPA.*, xlv, xxiii), deals with the restrictions which the accessory factors of the form exercise upon the use of the form in the sentence. C. D. Buck has a detailed study of the original meanings of the "Words of Speaking and Saying in the Indo-European Languages" (*AJP.*, xxxvi, 1, 125). W. Petersen, in "*Der Ursprung der Exozentrika*" (*Indogermanische Forschungen*, xxxiv, 254), seeks to show that compound adjectives of the type *ροδοδάκτυλος* start as substantives and later develop the adjectival use. R. G. Kent gives brief summaries of papers dealing with the linguistic side of Indo-European philology, read at meetings of learned societies in the United States from March, 1913, to June, 1914 (*Indogermanisches Jahrbuch*, ii, 217). H. S. Gehman handles a hitherto neglected subject, "The Interpreters of Foreign Languages among the Ancients" (doctoral dissertation, Univ. of Pennsylvania), supplementing it with brief articles on kindred topics (*CW.*, viii, 9; *PAPA.*, xlv, xvii; *CJ.*, xi, 50).

Indo-Iranian.—In the Harvard Oriental Series, edited by C. R. Lanman, Volume xvii has appeared: *The Yoga-system of Patañjali, or, the Ancient Hindu Doctrine of Concentration of Mind;* embracing the mnemonic Rules, called *Yoga-sūtras*, of Patañjali; and the Comment, called *Yoga-bhāshya*, attributed to Veda-vyāsa; and the Explanation, called *Tattva-vāiçāradī*, of *Vāchaspati-miçra;* translated from the original Sanskrit by J. H. Woods. Woods has translated also the *Maniprabhā* in his article "The *Yoga-sūtras* of Patañjali as illustrated by the Comment called 'The Jewel's Lustre' or *Maniprabhā*" (*JAOS.*, xxxiv, 1). A few notes on "Pāli Lexicography" are given by C. R. Lanman (*PAPA.*, xlv, xxii).

S. G. Oliphant continues his studies in "The Vedic Dual; Part II, The Dual in Similes" (*JAOS.*, xxxv, 16), showing that in the Vedic literature the elements compared regularly agree in number, and applying this principle to the interpretation of passages. L. C. Barret has published "The Kashmirian *Atharva Veda*, Book Four" (*JAOS.*, xxxv, 42; see *A. Y. B.*, 1913, p. 806, and 1911, p. 779); 15 of the 40 hymns in the book consist of material mainly new. Passages in the *Atharva Veda* are freshly interpreted by F. Edgerton (*AJP.*, xxxv, 435) and by R. G. Kent (*JAOS.*, xxxiv, 310). F. Edgerton's "Hindu Beast Fable in the Light of Recent Studies" (*AJP.*, xxxvi, 44, 253) is a valuable critique of, and corrective to, Hertel's "*Pañcatantra: seine Geschichte und seine Verbreitung.*"

The Madrassa Jubilee Volume, in honor of Sir Jamsetjee Jejeebhoy, issued at Bombay, contains three articles by American scholars: "Allusions in Pahlavi Literature to the Abomination of Idol-Worship," by A. V. W. Jackson; "The Story of Cambyses and the Magus, as told in the Fragments of Ctesias," by C. J. Ogden; "The Grave of King Darius at Naksh-i-Rustam," by H. C. Tolman. The last-named has written also on "The Middle Iranian Representation

[1] Periodicals are cited under the following abbreviations: *AJP., American Journal of Philology; CJ., Classical Journal; CP., Classical Philology; CQ., Classical Quarterly; CW., Classical Weekly; JAOS., Journal of the American Oriental Society; PAPA., TAPA., Proceedings* and *Transactions of the American Philological Association.*

of I. E. $\hat{n}$ and $\hat{r}$ " (*PAPA.*, xlv, xxviii).

Etymology and Phonology, General and Classical.—E. W. Fay continues his progress in identifying suffixes as independent elements, in "Indo-Iranian Word Studies, II" (*JAOS.*, xxxiv, 329), and has a valuable study in root contamination in his "Indo-European Initial Variants of *DY- (Z-) / Y- / D-*" (*CQ.*, ix, 104). H. H. Bender, in "The Accent of Sanskrit *-mant* and *-vant*" (*IF.*, xxxiv, 383) shows the relation of the accent of the adjectives with these suffixes, to that of the stems from which they are formed. W. Petersen has a monograph upon "The Greek Diminutive Suffix *-ισκο-, -ισκη-*" (*Trans. Conn. Acad. Arts and Sciences*, xviii, 139). C. D. Buck's "Lesbian *αι* for *ᾱ* and *η* " (*CP.*, x, 215) presents corrected interpretations of forms found in the new papyrus fragments in the Lesbian dialect. G. Hempl interprets the Hittite inscriptions written in cuneiform script, as a dialect of Greek (*Nation*, ci, 324).

A. R. Anderson has made a complete collection of the instances of "EIS in the Accusative Plural of the Latin Third Declension" (*TAPA.*, xlv, 129). E. W. Fay discusses the passages relating to "*Nigidius Grammaticus; Casus Interrogandi*" (*AJP.*, xxxvi, 76). G. H. Cohen suggests that the frequentative verbs in *-tāre* started from *frequentāre* (*CP.*, x, 217). J. C. Rolfe removes from the list of Roman provinces "The So-called Callium Provincia" (*AJP.*, xxxvi, 323). A. L. Frothingham's "Grabovius-Gradivus, Plan and Pomerium of Iguvium" (*AJP.*, xxxvi, 314) is an important contribution to the understanding of the Umbrian bronze tablets. Miss Irene Nye offers an improvement in the interpretation of *ríhtúd amnúd* in the Oscan inscription known as the Cippus Abellanus (*CP.*, x, 218). E. W. Fay proposes another interpretation of the difficult portion of the inscription on the Oscan slingshot from Saepinum (*Rivista di Filologia*, xliii, 614).

Syntax, Greek and Latin.—A. T. Robertson's *Grammar of the Greek New Testament in the Light of Historical Research* (Doran) is an exhaustive and scholarly volume, embodying the fruits of the periodical literature up to the time of its publication, both in matters of grammar and in those of exegesis; it utilizes the sidelights thrown by the Greek of the inscriptions of Asia Minor and the neighboring islands, and by the language of the papyrus documents found in Egypt (see also *Greek Literature, supra*). F. E. Robbins discusses "Προλαμβάνειν with the Genitive" (*CP.*, x, 77).

The substantial accuracy of the term "Sequence of Tenses" and its pedagogical utility are defended by A. T. Walker (*CJ.*, x, 246, 291) and by R. G. Kent (*CW.*, ix, 2, 9), against the attacks made by W. G. Hale (*AJP.*, vii-ix) and by the *Report of the Joint Committee on Grammatical Nomenclature* (*A. Y. B.*, 1914, p. 769). J. J. Schlicher gives his third and concluding paper on "The Historical Infinitive" (*CP.*, x, 54; see ix, 279, 374), dealing with the imitation and decline of the construction.

XXXII. EDUCATION AND EDUCATIONAL INSTITUTIONS

ANNA TOLMAN SMITH

ACTIVITIES OF THE FEDERAL GOVERNMENT

Appropriations.—The decade and a half of the twentieth century completed by the year 1915 has been marked by great increase in the educational activities of the country. This increase has been stimulated by the passage by Congress of the Smith-Lever Agricultural Extension Act of 1914 (*A. Y. B.*, 1914, pp. 438, 771), which provides liberal aid for this work. Naturally the state and college authorities throughout the country have been formulating plans for the immediate use of the fund, having in view also the expansion provided for in the future (see also XVII, *Agriculture*). New impetus has also been given to the cause of vocational education by the work of the commission appointed under an act of Congress of 1914 (*A. Y. B.*, 1914, p. 400). The commission was formed in view of a proposed appropriation of $50,000,000 to be distributed by a Federal board among the states in the course of a decade. Expected favorable action by Congress on the proposal has encouraged local efforts and stimulated discussion of plans and policies throughout the country. (See also XV, *Vocational Education.*)

The customary appropriations by Congress for educational purposes were continued for the year ending June 30, 1915. The Department of Agriculture disbursed the continuing appropriation of $2,500,000 for the colleges of agriculture and the mechanic arts, and $1,633,500 for experiment stations. The Department of the Interior through the agency of the Commissioner of Indian Affairs disbursed above $4,400,000 for Indian schools and school buildings. For the current expenses of the public schools of the District of Columbia, Congress appropriated nearly $2,500,000, or half the total sum necessary for their maintenance, the District bearing the other half. The appropriations for new school buildings for the District exceeded one million dollars, and for playgrounds $43,000. Congress also appropriated very nearly $150,000 for the care and education of defective, neglected and refractory children in the District.

Schools Dependent on the Federal Government.—The annual appropriation for the Columbia Institution for the Deaf amounted to $76,000, and the appropriation for Howard University to $101,000. These institutions are under the general supervision of the Secretary of the Interior. The lump appropriation for the Military Academy at West Point amounted to $998,000; for the Naval Academy at Annapolis the amount separately reported was $575,000. There are expenditures connected with both these institutions which are comprised under other headings. In addition to the two superior institutions, the service schools for the Army include those at posts and garrisons and other selected points, also Army service schools at Fort Leavenworth and the Army War College at Washington; the system of education for enlisted men in the Navy established by order of the Secretary of the Navy on Dec. 16, 1913, has been maintained. (See also XII, *Military and Naval.*)

Education of Dependent Peoples.—The Federal Government is directly responsible for the education of the natives of Alaska, the schools for this purpose being under the control of the Bureau of Education. They number 70, scattered over an enormous area, with an enrollment of 3,650 pupils and a force of 97 teachers, six super-

vising officers, nine physicians, and a corps of medical assistants.

The schools for Indians, under the Commissioner of Indian Affairs, enrolled 27,775 pupils, beside which 4,943 Indian children were in public schools. There still remain 15,906 children of school age who are not under instruction.

Hawaii has a system of public schools under the territorial Government which enroll about 35,000 children, of whom one-third are Japanese and about one-fifth natives. The remainder represent various races.

The schools of the Panama Canal Zone have declined in enrollment with the completion of the canal. In 1914 they enrolled 1,270 white children and 1,492 colored.

The system of education established under the control of the director of education in the Philippine Islands is charged with the instruction of children in various stages of development. In 1914 these schools enrolled 618,478 pupils, of whom above 93 per cent. were in primary schools.

A common characteristic of all these endeavors to instruct the dependent peoples in our outlying possessions is the provision for industrial training adapted to their various conditions. In Alaska this effort was for a long time directed to the reindeer service, but more recently attention has been given to industrial arts. The success in building up a system of industrial training in the Philippine Islands based upon the native handicraft work has attracted the attention of other nations concerned in the instruction of alien or inferior races. (See also VIII, *Territories and Dependencies.*)

The Bureau of Education.—The Bureau of Education has long stood as the concrete expression of an idea which has not yet reached its full development in national consciousness. By its influence the state and city systems of public education in the United States have been brought to a high degree of unity as regards standards and operations, and every year increases public appreciation of this service. The appropriation for the Bureau for the fiscal year 1915 amounted to $120,000; for the education of the natives of Alaska, under the charge of the Bureau, $200,000; for the Alaska reindeer service $5,000, and for hospital and medical service, $25,000.

Auxiliary Agencies.—Among the educational agencies of the Federal Government may properly be included the libraries and scientific bureaus maintained by the Government. The appropriation for the library of Congress for the fiscal year 1915 amounted to $666,600, and for the Carnegie or Public Library, including branch library, maintenance and miscellaneous, to $72,000; the appropriation for the Smithsonian Institute amounted to $158,630; for the National Museum, $388,512, and for the National Zoological Park, $100,000. For the Government Building at the Panama-Pacific International Exposition, Congress appropriated $500,000, and for the exposition at Richmond celebrating the fiftieth anniversary of emancipation, $55,000. The Children's Bureau, which has grown out of the awakened sense of public responsibility for the physical welfare of mothers and young children, received $160,000 for salaries and expenses.

ELEMENTARY EDUCATION

Educational Progress, 1901-1913.—In magnitude and in rate of increase the educational work of the United States exceeds that of any other country. It is also more complex by reason of the varied population and the diversity of demands in communities ranging from pioneer settlements to centers of congested population. The extent and increase of the work are illustrated by the statistics on the opposite page.

The figures given here relate to schools and higher institutions of the normal type. The registration in special classes of schools, i. e., private kindergarten, business schools, art schools, etc., and schools for special classes of children, defectives, wards of the nation, etc., increased in the same period from 363,550 to 414,634.

This growth, which in respect to the number of children and youth brought under instruction has kept

GENERAL STATISTICS OF EDUCATION, 1901–1913

Classification	Enrollment		Estimated Per Capita Cost		Estimated Total Cost	
	1901	1913	1901	1913	1901	1913
Public elemen. schools.	15,061,721	17,474,269	$14.50	$26.17	$218,509,590	$457,386,423
Public high schools....	558,740	1,134,771	13.48	56.54	7,533,646	64,159,952
Private elemen. schools	1,261,672	1,590,518	.....	32.00	.....	50,896,576
Private high schools...	177,260	148,238	.....	94.10	.....	13,949,196
Other public and private secondary sch'ls	.....	83,813	.....	157.47	.....	13,198,033
Universities, colleges, and profess'l schools.	176,435	266,815	160.52	335.57	28,322,558	89,535,110
Normal schools.....	63,402	94,455	76.50	158.34	4,850,353	14,956,005

full pace with the increase of population and has greatly exceeded that by the increase in expenditure, has taken place throughout the country, although not uniformly. It is a progress involving the operations of 48 state systems of education, above 1,200 city systems, and 570 higher institutions, supported in the main by public money but fostered also by private funds, which by their marvelous increase in recent years have challenged world-wide attention. It would be impossible in a brief survey to consider the dual aspects of this work, the administrative and scholastic; the difficulty is increased by the democratic principle of growth, which moves from the particular to the universal. It must suffice then to show by summaries the status of systems and institutions and to indicate by typical examples the trend of current activities.

The Public School System.—The public schools of the United States represent an effort on a grand scale to raise the general level of national intelligence and to equalize opportunities for all children. Nearly 20,000,000 children have been under instruction in these schools during the year 1915; they have required the services of 590,000 teachers and an expenditure of not less than $550,000,000. Although full returns for the year are not yet available, it is certain that the progress has been even greater than for the preceding years of the present century. The tables on the following page bring into comparison essential particulars as reported for the first year of the century and the last for which the data are complete.

The population of the United States increased in the period 1901 to 1913 by a little more than 25 per cent. The estimated school population (ages five to 18) increased in the same time by 17 per cent. and the enrollment in public schools by 20 per cent. Considering numbers merely it would seem that the school burden borne by the adult population diminished during the period, but in reality it greatly increased, as is shown by the expenditures. These were more than doubled in the years from 1900 to 1913, the rate of increase being 142 per cent. This financial advance is explained in part by the effort to overcome the deficiencies in school provision existing in certain states at the beginning of the period but it is more largely due to the expansion of the state systems.

Per Capita Expenditure.—The greatest inequality between the different sections of the country appears in the expenditure for public education, and the difference is emphasized by particulars for individual states. In 1900 the lowest expenditure per capita of average attendance was $3.10 reported for Alabama, the highest $41.68 reported for New York. In 1912-13 the former state had risen to $15.49 per capita of average attendance, while the lowest per capita reported, that for Louisiana, was $9.30. In New York the per capita had risen to $52.46 and was surpassed by Pennsylvania, $60.19, and Montana, $80.99.

Teachers' Salaries.—The average salary for teachers in 1912-13 was $22.36 per pupil in attendance; the divisions falling below this average

COMPARATIVE STATISTICS OF ELEMENTARY EDUCATION, 1901–1913

Geographical Division	Estimated Total Population		School Population—Ages 6–14			
			Number		Per Cent. of Total	
	1901	1913	1901	1913	1901	1913
United States	77,262,743	97,163,330	21,897,678	25,587,331	28.34	26.33
North Atlantic	21,443,488	27,435,178	5,240,901	6,440,337	24.44	23.47
North Central	26,807,746	31,043,717	7,562,417	7,917,672	28.21	25.50
South Atlantic	10,540,535	12,763,921	3,356,029	3,871,913	31.83	30.33
South Central	14,259,344	18,206,281	4,683,191	5,650,547	32.84	31.03
Western	4,211,630	7,714,233	1,055,140	1,706,862	25.05	22.13

Geographical Division	Enrollment in Public Schools		Average Daily Attendance		Total Teachers		Total Expenditure (thousands)	
	1901	1912–1913	1901	1912–1913	1901	1912–13	1901	1912–13
United States	15,603,451	18,609,040	10,692,091	13,613,656	430,004	565,483	$226,043	$521,546
North Atlantic	3,697,221	4,423,921	2,669,503	3,541,599	106,200	138,724	89,485	171,781
North Central	5,830,362	5,995,796	4,046,812	4,617,363	184,007	215,746	90.073	197,330
South Atlantic	3,022,905	2,766,169	2,008,060	1,854,673	49,927	69,070	15,149	33,962
South Central	2,219,517	4,025,599	1,398,788	2,555,313	64.558	94,180	13,439	51,161
Western	833,446	1,397,555	568,928	1,044,708	25,312	47,763	17,895	67,309

Geographical Division	Per Cent. of School Population Enrolled		Per Cent. of Enrolled Pupils in Average Attendance		Expenditure Per Capita of				Average Number of Days Schools Were Kept Open	
					Population		Pupils in Average Attendance			
	1901	1912–1913	1901	1912–1913	1901	1912–1913	1901	1912–1913	1901	1912–1913
United States	71.26	72.73	68.52	73.2	$2.93	$5.37	$21.14	$38.31	144.2	158.1
North Atlantic	70.55	68.69	72.20	80.1	4.17	6.26	33.52	48.50	177.2	181.0
North Central	77.10	75.73	69.41	77.0	3.36	6.36	22.26	42.74	157.5	164.9
South Atlantic	66.14	71.44	63.02	67.0	1.28	2.66	9.61	18.31	112.1	132.6
South Central	64.15	71.24	64.66	63.5	1.06	2.81	7.54	20.02	96.4	129.8
Western	78.99	81.88	68.26	74.8	4.25	8.73	31.46	64.43	143.0	164.7

were the South Atlantic, with $11.92, and the South Central, with $13.46. Three states in the former division fell below the average for their group and three in the latter. It need hardly be said that if the analysis is carried out for districts, the results are often startling and amply justify the universal and intense campaign for adequate salaries.

The average length of the school year is closely involved with the salary question; here again there has been progress during the present century in all divisions of the country, but at the best a school year in the United States is shorter than in any other of the leading countries.

Sources of Income.—The sources of income for the public schools and the relative proportion from each source as shown by the latest analysis are as follows:

Local tax, it will be seen, is the

Geographical Division	Per Cent. of Whole Revenue Derived From			
	Permanent Funds and Rents	State Tax	Local Tax	Other Sources
United States	3.58	15.45	74.05	6.92
North Atlantic	.76	13.74	75.18	10.32
North Central	5.31	10.13	80.82	3.74
South Atlantic	.84	26.27	66.49	6.40
South Central	7.89	30.01	54.39	7.71
Western	4.68	18.90	70.19	6.23

most prolific source of revenue; the proportion from this source exceeds 90 per cent. in Massachusetts (96.37 per cent.), Rhode Island (92.38 per cent.), Ohio (90.52 per cent.), Kansas (96.33 per cent.), North Carolina (91.07 per cent.), and Florida (92.58 per cent.). In Alabama the proportion from the local tax falls to 25.8 per cent. The necessity for increasing the local school tax in this state is admitted and a bill was passed by the legislature in the session of 1915 providing for a constitutional amendment permitting this increase; a campaign is now in progress in support of the proposal.

Adjustment to Community Needs.—The comparative statistics not only furnish a measure of progress but they disclose great inequalities in the school provision of different parts of the country. The national bearing of the inequality between urban and rural districts was forced upon public attention by the first Conference for Education in the South and has been emphasized anew at every subsequent conference. As a result chiefly of this emphasis interest has shifted from the mere question of the number of schools and their cost to that of their fitness to community conditions and community needs.

RURAL SCHOOLS

Present State of Rural Education.—About 13,000,000 pupils, or 64 per cent. of the school children of the United States, are enrolled in rural schools. These employ two-thirds of all the teachers and are maintained at less than half the cost for all public schools. The general state of these schools is illustrated by the results of several investigations completed during the year 1915.

With regard to teachers it is shown that one-third of those in rural schools have had no professional training whatever; above two-thirds of these teachers hear from 25 to 35 recitations daily; their average annual salary is less than $485, the average for the United States. In respect to child welfare it appears that country children attending rural schools are less healthy and have more physical defects than the children of the cities, including those of the slums. The rural schoolhouse, from the standpoint of health and general fitness for its important use, is the worst type of building in the whole country, including not only those used for human beings but also for live stock and domestic animals.

The bad effects of district control, which still prevails in 28 states, are illustrated by a special survey of small country schools in Colorado. For 1,725 districts the enrollment in school for the last eight years had been only 68 per cent. of the children of school age, and the average attendance only 61 per cent. For 107 districts having altogether 7,522 school children, there was a force of 321 directors, or one director for every 20 children. In spite of this waste Colorado stands above the majority of the states in rural-school conditions.

Current Improvement of Conditions.—The year has afforded some notable instances of progress in remedying the evils noted. In 1913 six states reported plans for standardizing their country schools. Five states have since been added to the list. The standardizing plan adopted by the state superintendent of Illinois is probably the most comprehensive and efficient thus far developed. It relates to both material and instructional conditions and is promoted by the award of one or two diplomas to all schools that meet either the minimum or higher standard.

Forty-three states have authorized or required the transportation of pupils to public schools at the expense of school districts. This action has led to the consolidation of a part of the rural schools in each of the states. Anderson County, Tenn., for example, has more than half completed an extensive plan for consolidating all the district schools in the county.

The adoption of the county unit for school administration was endorsed by the state superintendents of public instruction and by the National Education Association in their annual meetings of 1914, and has been under consideration by the legislatures of 10 states during 1915. The system is already in full operation

in 18 states, while 39 states make the county the unit for school supervision.

The legislature of Kansas appropriated $25,000 for 1915-16 and the same amount for the year following to aid poor districts in maintaining their schools for seven months in the year. The Maine legislature raised the minimum length of the school year from 26 to 30 weeks. The legislature of Wyoming passed a bill providing for an annual school poll tax in each county, amounting to $2 for every person between the ages of 21 and 50 years, to be applied to county school purposes. Following the precedent established by Ohio and Vermont, Utah and Washington have created commissions to investigate their systems of public instruction.

State officers are appointed for the special supervision of rural schools in 36 states, and several others report special county inspectors whose duty it is to visit the rural schools of every district, helping the teachers by practical suggestions, and promoting community activities, both industrial and recreative.

Legislative sanction has been secured for some or all of the essentials to rural-school reform in the majority of the states. The most comprehensive act of the year was the adoption by the legislature of Vermont of a new code for the system of education (see also *Higher Education, infra*). As regards rural schools the code raises the minimum length of a school year to 34 weeks in all communities, makes a minimum salary schedule for teachers of $12 a week mandatory, and provides for a school in every community having eight pupils or the means of transportation to a central school if preferred. Laws fixing a minimum salary for teachers are reported from 13 states. During the year Texas, Alabama, Florida and South Carolina passed compulsory education laws; Georgia and Mississippi alone are still wanting to complete the list.

Teachers for Rural Schools.—The improvement of rural schools has caused great increase in the provision for the training of teachers for their service. Normal departments have been added to county or district high schools by recent legislation in eight states, and by a vigorous revival of the policy in the states of the Central West where it was previously authorized. The laws on this subject have all copied that of New York and all authorize state aid for the work, the annual appropriations ranging in amount from $50,000 to $100,000. Minnesota has created the office of state supervisor of teacher-training departments in public high schools and has appointed a very competent woman to the position. Nevada, which has no state normal schools apart from the normal department of the state university, has developed a system of teacher training in county high schools by cooperation between the state and counties; the former pays the salary of the training teacher—$1500 to $1800 annually—the county furnishes the room and equipment, and for the formation of a class there must be at least five students who are graduates of a four-year high school course or have equivalent attainments. The system is carried out under the direction of the state board of education.

Efforts to convert temporary, crude teachers into leaders and strong forces in community life include the provision of permanent homes with grounds for gardens and fields which may be used as demonstration plots in connection with the teaching of agriculture. Very few communities have made such provision, but the experiment has proved successful wherever tried.

URBAN SCHOOL SYSTEMS

Summarized Statistics.—The cities of the United States reporting to the Bureau of Education for the scholastic year 1913-14 numbered 1,233 and included all communities having 5,000 or more inhabitants. These cities comprised 42 per cent. of the entire population of the country and enrolled in their public schools 6,710,000 pupils, employed 12,388 supervising officers and 174,600 teachers, and expended on their schools above $313,000,000. Comparison with the country as a whole shows that the city systems enrolled 36 per cent. of all the pupils in public schools, employed

33 per cent. of all the teachers, and expended 60 per cent. of the aggregate amount spent for all public schools.

Survey by Groups of Cities.—The growth of city school systems corresponds in certain respects to the movement of population. The vast and racially varied populations of the larger cities cause great complexity in their school problems, while at the other end of the scale there is constant increase in numbers by the rise of villages to the city status. The distinction between the smaller cities and populous rural districts is not so great as that between large and small cities. The number of inhabitants, the prevailing industries and conditions of growth, determine the special problems of cities, hence they must be studied individually or in groups. The Bureau of Education, in common with other offices for social investigations, classifies city statistics in four groups, as follows: cities having populations of 100,000 and more; cities 25,000 to 100,000; cities 10,000 to 25,000; and cities with populations of 5,000 to 10,000. Among the facts disclosed by this analysis the following are of interest.

The 50 cities of the first group enroll in their schools 44 per cent. of all the pupils in the cities and expend more than half the money required for all city schools. For salaries alone these cities (three not reporting) expended $95,000,000 in 1914, which was 58 per cent. of the salary expenditure in the 1,233 cities. The differences between the individual cities of this first group, however, are much greater than those in any other group. The cause is apparent when it is considered that the group includes eight cities having each above 500,000 inhabitants, and of these, three that have passed the million mark. In these great centers of population, the business side of school administration and the depending social-welfare activities assume even greater importance than the scholastic problem. Upon these cities rests the responsibility of assimilating the children of the vast army of immigrant laborers. For this purpose every effort must be put forth to retain both the boys and girls in school against the temptations of work which offer only makeshift employment, and of fitting them for the duties of citizenship or intelligent home making. To insure permanent results, illiterate parents must be taught and the evils of underfeeding and disease persistently resisted. In short, the school authorities of these largest cities have to contend with many of the gravest evils that threaten our national welfare. New York City alone deals with a school enrollment which is only exceeded by that of eight states in the Union, and expends for its schools an annual sum exceeded by two states only. The concentration of energy and money in the school systems of the eight largest cities is strikingly shown by the following table, which compares certain items pertaining to them with the corresponding particulars for all other cities:

	Population, 1910	Statistics of Public Schools			Total Current Expenditure[1]
		Number of Supervising Officers	Number of Teachers	Enrollment	
New York	4,766,883	276	19,105	827,424	$36,706,494
Chicago	2,185,283	29	7,544	355,668	12,731,954
Philadelphia	1,549,008	65	5,432	231,385	7,081,830
St. Louis	687,029	42	2,193	97,858	4,084,693
Boston	670,585	52	2,804	119,105	5,516,762
Cleveland	560,663	38	2,968	90,413	3,569,504
Baltimore	558,485	17	1,912	77,219	1,954,670
Pittsburgh	533,905	59	2,087	79,253	3,602,303
Total	.....	578	44,045	1,878,325	75,248,210
Total of Other Cities (1,116) Reporting the Items	.....	11,810	130,555	4,829,873	149,572,210

[1] Not including outlay for grounds, buildings, interest on bonds, etc.

Expenditures.—The grouping of cities, as explained, enables each one to view its problem in the light of others having the same general conditions. Even to a casual student of the subject, certain differences stand out in a manner to challenge explanation. This is particularly the case in respect to expenditures. Omitting the cities with populations exceeding 500,000, the range of expenditure for the remaining cities of the first group is from $423,147 in Lowell, Mass., with a school enrollment of 13,198, to $4,350,176 in Detroit, whose school enrollment is 77,024. In the second group of cities (populations 25,000 to 100,000) the range of expenditure is from $60,963 (Wilmington, N. C., enrollment 3,826) to $1,426,917 (Houston, Tex., enrollment 14,555). The expenditure in the latter case included $1,042,427 for buildings, grounds and equipments.

These examples indicate clearly the necessity that the business side of public education both in cities and states be entrusted to experienced business men.

The cities of the third and fourth group number 1,008 and report altogether 13,000,000 inhabitants, or about one-third the total urban population. While the individual cities of the first group present within their own areas great social extremes, the cities of the third and fourth group (populations below 25,000) include the most extreme social types. Of two adjacent towns in the same state, one has large manufacturing plants and many of the citizens are highly paid superintendents, bosses and skilled workmen. The tax rate for school purposes is only three or four mills on the dollar. In this city the school superintendent receives a good salary, and the teachers are efficient and well paid. The population of the other town is made up largely of unskilled laborers who live in cheaply constructed houses. The school tax is 15 or 16 mills, yet with this high rate the schools are less efficient, since the higher rate produces less revenue than the lower one in the wealthier community.

The examples given are typical of inequalities which constitute a national problem. Its importance was emphasized at a special conference of the superintendents of public schools in the cities of the third group (populations 10,000 to 25,000) held at Cincinnati on Feb. 24. In view of the financial limitations of the poorer cities, it was admitted that they cannot meet the urgent need of vocational training without external aid. Efforts in this direction have been stimulated by the hope of national aid which will help struggling urban districts as the rural districts have already been helped.

Welfare services on a large scale have caused recent extension of school administrative functions. The cost of these services is not always reported separately nor is it always met from the income of the schools. The largest expenditure for such purposes reported is $134,389, credited to Philadelphia. In the second group of cities the largest amount is $10,652 reported by Schenectady, N. Y.

Flexible Grading and Classification.—The system of rigid grading for city schools under which the brighter children marked time and the duller children became hopeless repeaters has broken down; flexible grading is now the ideal. Its first manifestation was the change from annual to semi-annual promotions, which are now allowed in the majority of cities; the latest evidence of an enlarged conception of the purposes of public education is the reclassification of city schools on what is generally known as the six-and-six plan. This plan provides for an elementary school covering the first six school years, followed by an intermediate school of two or three years leading up to the high school. At least 40 cities have formally adopted the plan and in several instances have introduced modifications, of which the most important is that of departmental teaching for the intermediate school or upper grades; this method has resulted in several cities in the grouping of upper-grade pupils in central buildings for greater convenience in instruction. In some cities, as Rochester, N. Y., Ogden, Utah, and Salt Lake City, the grades thus brought together are called the junior high school; in others, as Oakland, Cal., they are called interme-

diate schools. The new classification promotes the alternation of academic and industrial exercises. In a few instances, notably in Ogden, Utah, industrial work at home or in shop, if approved by the school authorities, may be accepted for the school work. An extreme example of the new type of city school is afforded by the "Gary system," which combines flexible grading, longer sessions and well balanced alternations of instruction, work and recreation. The most notable experiment of the year in city systems is the application of the Gary system to selected schools of New York City under the immediate direction of its originator, William A. Wirt.

Free Textbooks.—In view of the widespread discussion of questions pertaining to the cost and supply of textbooks, a special bulletin on the subject has been prepared by the Bureau of Education which comprises very full information as to free textbooks and the closely related subject of state uniformity in textbooks. At present the system of free textbooks has been adopted by 15 states and there is a strong movement for extending the system to all other states. From very reliable statistics covering 99 per cent. of the total textbook business, it appears that the aggregate annual cost of the books used in public schools, elementary and high, is $14,261,768.25. For each child enrolled in the public schools in the United States, the total cost of textbooks is estimated at 78.3 cents. Since the expenditure per child for all school purposes is approximately $38.31, the cost of textbooks is about two per cent. of the total cost of maintenance, support and equipment. The annual per capita cost of textbooks on the total population basis is less than 15 cents. These figures show that there is little ground for the fear that the introduction of free textbooks will add greatly to the cost of the public-school system or will greatly increase the rate of taxation for school purposes. In reality the cost for textbooks is a relatively small item in the total school expenditure.

Apart from the question of cost, opposition to the adoption of free textbooks arises from the feeling that uniformity of textbooks throughout a state is not desirable. The investigation seems to dispose of that objection. Under the free textbook system, uniformity results for each school administrative unit, viz., city, county, township or district, but state uniformity does not follow. The names of only five states occur both in the list of the 15 states with free textbooks and the list of the 24 states with state uniformity. Of these five, Arizona and California are states in which all textbooks are state property, purchased with state funds, and loaned to school districts by the state; state uniformity is therefore practically necessary. In the states furnishing free textbooks there seems to be no popular demand for state uniformity, such as there is in other states.

Adult Illiteracy.—The census of 1910 made the startling disclosure that while negro illiteracy is declining, white illiteracy is increasing, due to the class of immigrants coming to this country in recent years, and settling as a rule in the large cities of the East (*A. Y. B.*, 1914, p. 774). The common schools, which have wonderful success in Americanizing foreign-born children, do not reach the adult illiterates. These naturally sink to the class of unskilled laborers and become elements of industrial and social unrest. The cities affected are aroused on the subject and evening classes for instructing foreigners in English and civic subjects combined with industrial training are rapidly multiplying. It is, however, difficult to teach adults, wearied with the day's work, in night schools, and the conviction is increasing that their attendance must be secured at day classes by the coöperation of employers and public authorities. The Federal Bureaus of Immigration and Education have coöperated during the year in a campaign of education on this vital problem.

EDUCATION OF THE NEGRO

Public Schools in the South.—The past decade has been marked by the decline of illiteracy among the negroes and the increase of their indus-

trial efficiency. These changes have been brought about by common schools and the industrial training maintained for that race. This progress, however, does not lessen the need for the continuance of the special efforts to which it is due, since negroes still form one-third of all illiterates in the southern states.

The number of high schools for the negroes of the South steadily increases. In 1910 there were 141 schools of this grade, with 473 teachers and 8,257 students; the corresponding numbers for 1914 were 161 schools, 638 teachers and 11,770 students. Of the total students in the latter year, 3,753 were males and 8,617 females. A little more than half the young men pursued manual training and very nearly all the young women were taking courses in domestic economy.

Private Institutions. — Institutions supported largely by benefactions form a very important part of the provision for the education of the negro; their number naturally lessens as the public schools multiply. Recent efforts for the improvement of the private schools have forced the feeblest to suspend. Those that remain, however, are stronger than before. They are of the same general character as the colleges for negroes sharing in the "land grant" and consequently are classified with them. The total number of these higher schools reported in 1914 was 199, of which 19 derive their support in part from national, state or municipal funds, including 17 which share in the grant for colleges of agriculture and the mechanic arts. The 2,822 teachers and 54,271 students in these 199 institutions are distributed as follows:

	Male	Female	Total
Elementary	12,688	18,118	23,525
Secondary	8,398	11,639	30,746
Collegiate and professional	2,430	989	54,271
Total	23,516	30,746	108,562

Property to the value of $16,327,569 is owned by 177 of these schools, and 145 of them report receipts for the year aggregating $2,912,574. The annual incomes range from $450 to $345,581, reported by Hampton Institute. Public appropriations were received by 41 of these institutions in amounts varying from $50 to $101,000, the latter the sum allowed by Congress for Howard University. The total receipts from public funds were $703,356, which was one-fourth the receipts from all sources.

Hampton Institute, included in this list, is one of America's chief contributions to educational ideals. It was the prototype and inspirer of Tuskegee, which stands as a concrete proof of administrative and organizing power in the negro race. The two institutions have combined in promoting a "national health week" with the purpose of bringing about better health conditions among the ten millions of the negro race in the United States.

A national exposition commemorating the achievements of the negro race during the last 50 years was held at Richmond, Va., on July 5-25. Congress appropriated $55,000 to aid the enterprise, which was under the auspices of the Negro Historical and Industrial Association.

SECONDARY EDUCATION

General Conditions.—Secondary education in the United States is the province of public and private high schools, covering usually a period of four years. In duration and scope the course of study is inferior to that of the secondary schools of Europe, and for equivalence with the latter at least two years of the typical American college course must be added to that of the high school. By reason of its brevity and varied aims the secondary school is now the most unsatisfactory factor in the public education. The severe criticisms and many crude experiments of which it is the subject are, however, the results of attempted adjustments to new demands rather than signs of radical defects. Meanwhile the popular appreciation of secondary education is indicated by the ever increasing number of public high schools. The rate of increase, especially in the

southern states, during the first decade of this century was astonishing; the increase still continues, but at a pace more moderate and more uniform throughout the country. In 1900 there were 6,005 public high schools with 519,251 pupils; in 1910 the schools numbered 10,213, with 915,000 pupils; in 1914 the numbers were: schools, 11,515, pupils, 1,218,804. It is noticeable that while private secondary schools declined in number and enrollment from 1900 to 1910, they have since increased in both respects.

Statistics.—The distribution of both classes of high schools by geographic divisions in 1914 was as follows:

Geographical Division	Public High Schools					Private High Schools				
	Number	Teachers	Students			Number	Teachers	Students		
			Boys	Girls	Total			Boys	Girls	Total
United States.	11,515	57,909	541,486	677,318	1,218,804	2,199	13,890	72,871	81,986	154,857
North Atlantic..	2,359	16,103	171,525	204,754	376,279	692	5,377	28,547	28,123	56,670
North Central..	5,168	24,358	217,652	274,393	492,045	577	3,436	15,274	22,302	37,576
South Atlantic..	1,305	4,281	36,214	49,510	85,724	347	1,900	10,909	11,547	22,456
South Central...	1,694	6,187	54,877	73,176	128,053	376	1,867	12,428	11,578	24,006
Western.....	989	6,980	61,218	75,485	136,703	207	1,310	5,713	8,436	14,149

It is not possible to give a complete statement of the property values and incomes of the public high schools since these are often included in aggregates for state or city systems, but the data attainable show very marked increase during the last decade in all resources. This is particularly noticeable in respect to the value of scientific apparatus, which for 10,183 schools amounted in 1914 to $16,447,825. The expenditures for sites, buildings, and improvements for 2,778 schools reached a total of $21,530,142. The total income from all sources for 3,666 schools was $21,984,708. The highest income is reported from California, viz., $3,224,534 for 133 public high schools. Massachusetts follows with $1,726,858 for 104 schools; New York reports $1,538,798 for 190 schools; and Illinois, $1,160,891 for 181 schools.

Denominational Control of Private Schools.—The majority of the private high schools, viz., 1,489 out of a total of 2,199, are under the control of religious denominations. They employ 8,762 teachers and enroll 101,329 students of high-school grade. The number of students pertaining to the different denominations range from 10 to 49,095, the latter belonging to the Roman Catholic Church. Of 28 denominations represented in this work, only 12 report above a thousand students in the schools under their charge.

Courses of Instruction.—The varied purposes which the high schools serve are indicated by the distribution of students by courses of instruction as here given:

Course	Public High Schools		Private High Schools	
	Number Reporting	Students	Number Reporting	Students
Academic.....	11,398	933,822	2,199	132,115
Commercial.....	2,191	161,250	723	17,457
Technical or Manual Training.....	1,312	80,840	122	4,333
Training for Teachers.....	1,051	21,076	288	6,084
Agricultural.....	1,553	32,021	124	2,346
Domestic Economy.....	1,655	79,574	276	7,133

It will be seen that the majority of the high-school pupils are in the academic course; but this course itself is subdivided into classical and scientific, and there is further division on the basis of students who are preparing for higher institutions, and those who do not have this end in view. The extent of the preparatory work which formerly determined the

entire course of secondary education is indicated by the proportion of pupils enrolled in college-preparatory courses. In 1914 they comprised a little less than five per cent. of the total secondary pupils in public high schools, and 15 per cent. of those in private high schools. The ratios for graduates were much higher in both cases and were distributed as follows among the geographical divisions of the country:

Geographical Division	Public School Graduates		Private School Graduates	
	Total	Per Cent. Prepared for College	Total	Per Cent. Prepared for College
United States	160,606	34.73	20,303	39.12
North Atlantic	47,518	28.82	8,598	43.91
North Central	72,639	33.78	4,964	31.00
South Atlantic	10,488	42.91	2,497	46.42
South Central	13,788	44.90	2,494	40.10
Western	16,173	42.50	1,750	26.80

In both public and private high schools, the girls outnumber the boys, and they also form the majority of the total number of graduates. On the contrary, in the total of graduates prepared for college, the number of boys exceeds that of girls by 2,168 in the case of public high schools, and by 3,056 in the case of private high schools.

Duration of Attendance.—The majority of public high schools offer the full four years' course; not only so but this class increases, as appears from the fact that their ratio to the total number rose in the last half decade from 88 to 92½ per cent. The latter ratio ranges from 76.4 per cent. in the South Atlantic Division to 97½ per cent. in the Western Division. Statistics compiled for a series of years, however, show a decided decline in high-school enrollment after the second year. This fact explains the efforts for organizing junior and senior high schools, or as some prefer, intermediate and high schools. This scheme, which is already in operation in above 170 cities, has been promoted by the demand for vocational education, which must find its place in the years corresponding to the upper classes of the graded school and the first two years of the high school. The junior high school is indeed an entering wedge for the reclassification of the entire system of public schools with the purpose of abridging the period of elementary instruction and prolonging that of the secondary order. The proposed change has an important bearing upon the relation of secondary to higher education and the endeavors to develop the latter in conformity with world standards.

Relation with Colleges.—While the relation between high schools and colleges affects the entire range of secondary studies, it is felt chiefly in the courses leading directly to college. Artificial barriers between the two orders of instruction have been removed by law in the western states, which maintain for all their people an open door to the university. In the East this has become one of the dominant issues of the time. Step by step the older universities are adjusting their entrance requirements to the demands of secondary schools supported by popular approval.

Vocational Education.—The movement for vocational education has made progress during the year in the six states that have organized systems for the purpose, and by the addition of two states, Connecticut and California, to the number. In respect to the industrial arts the question of administration is uppermost at the present stage, and while there are strong arguments for placing the new order of schools under special boards, the policy does not meet with general support and in the extreme form has not been attempted. A more urgent need is that of teachers competent to give instruction in the principles and processes of the various

trades. At present this need is met by agencies for training craftsmen in the art of teaching. New York State exceeds in the number of centers equipped for this work; the Massachusetts Board of Education is establishing evening classes for this purpose at each of the state industrial schools; among other important centers from which trade teachers are drawn are the Carnegie Institute of Technology, Pittsburgh, Pa., the Bradley Polytechnic Institute, Peoria, Ill., and Wisconsin University. (See also XV, *Vocational Education.*)

Special training for agricultural pursuits is already conducted upon well defined principles and by approved methods. In 17 states the law requires that the subject be taught in all elementary schools. The number of high schools reporting agricultural courses in 1914 was 1,677, with 34,367 pupils taking the subject; this was an increase above 1913 of 263 schools and 4,552 pupils; approximately 40 per cent. of these pupils were girls. Of the entire number of high schools, 115 are classified as "agricultural high schools," authorized by recent legislative acts. Of this number 86 are in the southern states. It is noticeable, however, that none of the schools limits its work to agriculture; in fact, they differ but little in this respect from the older high schools, which have added to their curricula agriculture and domestic economy. (See also XVII, *Agriculture.*)

TRAINING OF TEACHERS

Public Agencies.—New demands respecting the training of teachers have been considered incidentally in connection with other subjects. The institutions specially engaged in preparing teachers for the elementary schools comprise normal schools, public and private, and high schools. In 1910 the total number of the public institutions was 972, with 95,908 students; in 1914 the corresponding totals were: institutions, 1,286; students, 110,613. The private institutions in the same period decreased from 425 with 19,369 students to 334 with 11,833 students. Appropriation for the current expenses of public normal schools have reached $9,000,000, and in 1914 an additional $3,500,000 dollars was supplied for buildings; the receipts from other sources give an income in round numbers of $17,000,000.

Agricultural Education.—The impossibility of meeting the annual demand for new teachers from the normal schools, which graduate only about 20,000 students annually, has necessitated new sources of supply. These are afforded by the normal departments of high schools and agricultural colleges. The latter are the chief dependence of the agricultural high schools which require teachers familiar with farming operations. Various plans are adopted for giving the intending teachers this practical experience. The Minnesota Agricultural College rents two farms for this purpose which are subleased to students. The student pays cash rent for the farm and receives $600 salary and his subsistence and one-half the net profits, if profits result. The Wisconsin Agricultural College has prepared a list of certain farms selected by the faculty which are used for farm practice for advanced students under what the instruction calls its "accredited farm system." A contract is made between the owner of each farm and the college, specifying the conditions under which the student works. For a full year's work on one of these farms, with supplementary reading, study, and investigation as outlined by the college, the student receives a half-year's credit for his bachelor's degree.

Summer Schools.—The chief function of summer schools is that of preparing candidates for the entrance examinations to the teaching service or for advancement in the service. The number of summer schools reporting sessions in 1914 was 704. Of these, 53 were regular sessions of universities, 40 of colleges, 73 of normal schools, 27 of other institutions, while 511 were independent schools. The number of students enrolled was 218,794, an increase of 37,506 above the number enrolled in 1913. The average length of the

sessions was 7.2 weeks; the estimated cost of the schools for the session of 1914 was $3,081,337.

University Departments.—The university departments of education are the resort of teachers aspiring to positions for which a university degree is required; the number of degrees in education conferred in 1913 was 1,044 (224 for men; 820 for women); in 1914 the total was 962 (168 for men; 794 for women).

HIGHER EDUCATION

Institutions and Students.—Higher education in the United States is the province of universities, colleges and technical schools, which numbered 567 in the scholastic year 1914-15, with a registration of 216,493 collegiate and resident graduate students. This was the largest number ever reported, being an increase of 14,262 students over the previous year and nearly double the registration in 1900. Special students and the students in professional departments raise the registration for 1914 to 283,114. Reports already received of the registration in the fall term indicate that for 1915-16 the number of college students will reach fully 290,000. Part of this increase consists of foreign students and of Americans who under normal conditions would seek European centers. The resources of the higher institutions have risen proportionately with the registration, their combined incomes from permanent sources amounting in 1914 to $63,134,763, an increase of $25,000,000 in five years.

The distribution of the higher institutions, professors and students by the geographical divisions of the country is as follows:

Geographical Division	Institutions	Professors and Instructors					Students			
		Preparatory Departments	Collegiate Departments	Professional Departments	Total (excluding duplicates)		Preparatory Departments		Total (excluding duplicates)	
					Men	Women	Men	Women	Men	Women
United States	567	3,977	20,763	6,792	25,389	5,923	33,837	18,027	217,683	117,295
North Atlantic	115	687	7,102	2,240	8,503	1,394	8,214	2,820	68,409	25,589
North Central	214	1,974	7,408	2,472	9,304	2,455	14,598	6,754	83,364	53,412
South Atlantic	103	592	2,228	687	2,615	844	4,221	3,727	23,905	12,761
South Central	87	418	1,734	786	2,358	756	4,781	4,029	22,424	13,229
Western	48	306	2,291	567	2,609	474	2,023	697	19,581	12,304

The extent to which coeducation prevails in the higher institutions is indicated by the following tabulation:

	Undergraduates
Colleges for men only	40,207
Colleges for women only	18,916
Coeducational Colleges:	
Men	90,281
Women	53,995
Total	203,399

As indicated in the table, the preparatory and professional departments are provided with separate professors or instructors and hence do not as a rule draw from the teaching force of the collegiate departments. The distribution of the students other than preparatory, who do not come within the present consideration, is as follows:

	Men	Women	Total
Collegiate	130,488	72,911	203,399
Graduate	8,885	2,209	13,094
Professional	35,695	1,484	37,179
Total	175,968	78,604	253,672
Special[1]	12,082	24,462	37,444
Total[2]	188,050	103,066	291,116

[1]Students in music, oratory, business courses, etc., not entered for a four-year course leading to a degree.
[2]Includes duplicates.

Property and Income.—The table following shows the property values and incomes of the higher institutions so far as reported:

PROPERTY AND INCOME OF HIGHER INSTITUTIONS

Geographical Division	Value of library, scientific apparatus, machinery, and furniture	Value of grounds	Value of buildings (including dormitories)	Productive funds	Receipts (all sources)	
					Total, exclusive of additions to endowments	Total, including endowments
United States..	$70,113,586	$87,757,360	$281,665,426	$362,742,823	$102,156,401	$120,579,257
North Atlantic....	23,261,593	27,187,914	112,124,436	178,032,675	36,562,325	47,952,436
North Central....	26,131,448	29,525,898	85,158,216	94,941,878	36,288,831	40,346,488
South Atlantic....	6,856,174	13,481,466	36,860,820	20,982,394	10,824,687	12,790,410
South Central....	5,500,851	8,185,825	21,125,286	22,536,513	8,303,203	8,742,856
Western.....	8,363,520	9,376,257	26,396,668	46,249,363	10,177,355	10,747,067

As compared with the previous year, the productive funds show an increase of $12,704,536, and the receipts exclusive of endowment funds an increase of $8,611,020.

The permanent sources of income in 1913-14 and amounts from each source as compared with 1907-08 were as follows:

	1907–8	1913–14
State and municipal appropriations.....	$9,649,549	$23,400,540
Income from invested funds.....	11,058,327	17,229,694
Income from tuition fees.....	15,390,847	22,504,529

Benefactions.—According to data published by the Bureau of Education, the total value of gifts and bequests for higher education for the period 1871 to 1914 (both inclusive) was $584,418,082. Of this amount 60 per cent. was received in the years 1900-1914 inclusive. Prior to 1900 the largest amount reported for a single year was $25,322,792, in 1899. Since that year the benefactions for each five years exceeded $25,000,000, 1914 being the banner year with a sum total of $31,357,398. As usual the universities and colleges received the lion's share, amounting to nearly 27 millions. Schools of theology and schools of medicine follow, the former with a little more than 1½ million dollars, the latter a little less than 1½ millions. Of the total benefactions 75 per cent. went to 45 institutions, and of this amount more than half to six universities already richly endowed.

Tuition Fees.—In respect to opportunity for free university education, the states of the North-Atlantic division are in strong contrast with those of other divisions of the country. The only higher institutions in the former division offering free tuition are the College of the City of New York and Hunter College for Women in the same city. This lack explains the continued pressure on the Massachusetts legislature for the establishment of a state university. Large provision, however, of fellowship and scholarship funds is made in the North-Atlantic states, which possess nearly half the total number, viz., 6,611 out of 15,125. Harvard University leads with funds of this kind given in 1914 amounting to $201,968; Columbia is second with $115,058.

Tuition fees yield only 22 per cent. of the income of higher institutions. The annual rate varies greatly, falling as low as $12 in several colleges for negro students and as low as $20 for white students. In 59 institutions the annual fees exceed $100, the maximum being $250, the fee at the Massachusetts Institute of Technology. Even at this rate the receipts from this source provide less than half the annual current expenditure. It is evident, therefore, that higher education in this country depends upon public support, whether this is given directly and adequately as in the case of state universities, or by the indirect method of gifts, subscriptions, etc.

Importance of Financial Resources.—These financial particulars are significant because resources have become a factor in determining the scope of an institution, that is, the class to which it belongs. The drift of graduate and professional students

is plainly toward the richest centers of learning. The six private institutions having largest benefactions, together with eight state universities having largest annual appropriations, draw one-half the graduate students and one-third the professional students in the 295 institutions reporting these departments. The majority of the remaining graduate and professional students are comprised in universities that are wholly postgraduate, and those that are only second in resources to the 14 referred to.

Even in the case of undergraduate students there is a tendency to concentrate in large centers. More than 25 per cent. of this class of students are found in 17 universities having each above 2,000 undergraduates; if the 30 institutions having between 1,000 and 2,000 undergraduates be included, the proportion rises to 48 per cent. of all undergraduates. These are not accidental conditions nor are they indications merely of gregarious tendencies. Low tuition fees and public relations attract large bodies of young people to state universities and agricultural colleges. Dense populations explain the large registration in eastern universities, but undoubtedly the prestige of individual institutions has irresistible attraction for ambitious youths in all sections of the country.

Large versus Small Colleges.—It is noticeable that nearly half the higher institutions, viz., 274, confine themselves to undergraduate work, and that the smaller colleges still hold over 50 per cent. of all undergraduates. Current discussions indicate a growing sense of the importance of the small college among the intellectual forces of the country. In this group a division is also taking place into junior and senior colleges, which is helping to define the various functions that higher education must perform in the modern state. The junior college is recognized by law in three states, Wisconsin, Missouri, and Virginia, which agree in making the entrance requirements equal to those of the full college, and in demanding proof of adequate provision for a two-years' course of college instruction.

Increased Facilities for Women.—Colleges for women exclusively have accomplished great results in spite of the general limitation of their resources. The year has been marked by an awakened interest in these institutions, due in part to the success of the efforts made by Wellesley to secure a large endowment fund and to replace the loss by the disastrous fire of 1914. The interest was quickened by the jubilee exercises at Vassar on Oct. 12, on which occasion Dr. Taylor, president emeritus, reviewed the notable contributions made by Vassar to the cause of higher education.

The opening of the new college for women at New London, Conn., and the measures for establishing a similar institution in Delaware leave New Jersey the only eastern state which has no college for women. The first graduate law school in America devoted exclusively to the instruction of women was opened at Cambridge in 1915 by Joseph Henry Beale, Royall professor in the Harvard Law School. (See also IX, *Law and Jurisprudence.*)

Public versus Private Control.—Of the higher institutions 93 are supported wholly or in part by national, state or municipal funds and are therefore under public control. Of this number 50 are land-grant colleges either independently organized or forming departments of state universities, seven are city institutions, two national institutions, and 34 state institutions not sharing in the land grant. Each of these groups presents special administrative problems which have been under discussion during the year. As a rule state and city institutions are coeducational, and where this is not the case, separate but equal institutions are generally maintained for women. The 474 institutions of private foundation present wide differences in scope and resources. The interaction of the two classes of institutions, public and private, is an important factor in their development. Each acts as a restraint upon the extreme tendencies of the other and also as a stimulus to their respective sources of revenues. Thus the influx of endowments for private universities is al-

most always followed by a liberal increase in the appropriations for state universities.

Colleges of Agriculture and the Mechanic Arts.—The land-grant colleges are included in the tables pertaining to higher education, but on account of their dependence upon the Federal Government and their special functions they claim separate consideration. The annual appropriations provided for these colleges by acts of Congress of 1890 and 1907 have greatly increased their resources and have given impetus to the practical studies for which they were originally intended. The principal statistics of the land-grant colleges as reported in 1907 and 1914 are here summarized:

	1907	1914
Number	66	69
Volumes in libraries	2,555,016	4,395,211
Total value of property	$97,446,701	$160,298,353
Income from:		
United States	$2,105,915	$3,592,198
States	7,778,014	17,997,765
Other funds, tuition, etc	4,608,955	13,301,261
Total, not including income of experiment stations	$14,492,884	$34,891,224
Instructors in the colleges of agriculture and mechanic arts[1]	3,112	6,370
Instructors in the entire institutions	5,413	9,526
Students:		
Preparatory	9,007	11,315
Collegiate, graduate, and 1- and 2-year course	25,651	38,971
Short and summer course	7,766	20,123
Total students in colleges of agriculture and mechanic arts[1]	42,424	69,132
Total students in entire institutions	62,781	115,054

[1] In the case of land-grant colleges which are departments of universities.

In the 52 land-grant colleges for white students the registration increased in the last five years from 28,489 to 40,210, or by 40 per cent. There was a decided increase in the number of students taking agriculture and household economics, the former rising from 4,855 in 1909 to 13,249 in 1914, an increase of 172 per cent.; and the latter from 1,443 to 4,018, an increase of 178 per cent. In the same period the number of students in the ten land-grant colleges for colored students increased from 6,766 to 9,251, all taking the practical branches.

The activities of the colleges have been greatly extended by the large demand for teachers of agriculture and household economics and also by reason of the coöperative agricultural-extension work growing out of the Smith-Lever act. In several states also the land-grant colleges are the chief promoters of the efforts to improve farm life and social conditions in rural communities. (See also XVII, *Agriculture.*)

Modifying Influences in Higher Education.—Changes in the general trend of higher education take place gradually and are only perceived in the survey of periods. The movement for scientific education, which began in the middle of the last century, is the cause of important changes that have marked the present century. They are reflected on the material side in the increase of resources and equipments, and on the scholastic side by the reaction against crowded programmes, uncertain standards and pretentious claims.

Two items in the material increase, namely, property valuations and endowments, are largely due to the cost of equipment for instruction in science and technical arts. In 1900, of 309 institutions reporting endowment funds, 136 had less than $100,000 each; in 1914, of 411 institutions reporting under this head, only 96 fell below $100,000. In the former year 51 institutions reported above $500,000 endowment; in the latter year 122 exceeded this amount and in

56 cases the endowments reported ranged from $1,000,000 to $5,000,000, while eight institutions had endowment funds exceeding $5,000,000. Of the universities not reporting under this head, at all, several are state institutions which receive large annual appropriations.

The scholastic changes, or changes in institutional aims and ideals, are shown by the voluntary withdrawal of several institutions from the higher rank to that of secondary schools, the limitation of others to undergraduate courses, and the consolidation of others for greater efficiency and economy of resources.

Consolidation.—The movement for consolidation affects particularly the group of state institutions and their relation to public administration. In Montana the higher institutions of the state have been combined in one university but without the proposed merging; by a provisional arrangement a common chancellor has been appointed, the choice for the post falling upon Dr. Richard T. Ely, professor of political economy in the University of Wisconsin. In Oregon, Kansas and Idaho state boards have been created charged with the government of all the higher teaching institutions of the state. The measure adopted by the legislature of Idaho is even more comprehensive. The state Board of Education constitutes also the board of regents of the state university, and to this body is committed the supervision and government of the university, the two state normal schools, other special schools of the state, and also the entire system of public elementary and secondary education. The Board itself, however, acts in a purely advisory and legislative capacity, the executive power being relegated to a commissioner of education who is appointed by the Board. It need hardly be said that the state universities have led in the measures for combining the resources and the courses of instruction of different departments.

Degrees.—Under existing conditions the degrees conferred by higher institutions form the only clear index to the prevailing choice in undergraduate studies. In 1913-14 the first degrees conferred were as follows:

Degree	Men	Women	Total
B. A. and equiv'ts.	7,968	7,567	15,535
B. S. and equiv'ts.	5,680	1,069	6,749
B. Ed. or B. Ped.	150	700	850
B. Ph.	722	350	1,072
B. Agri.	583	14	597
B. H. Econ.	109	166	275
B. Com. Sci.	228	7	235
B. Mus.	10	105	115
B. Journ.	19	....	19

Technical degrees conferred on men only were as follows: Civ. Eng., 370; Mech. Eng., 345; Min. Eng. and Met., 31; Textile Eng., 5; Chem. Eng., 87; Elec. Eng., 90; Agri. Eng., 12; Arch., 31. The number of honorary degrees conferred was 749.

University Extension.—A new type of university extension has been created by the action of Massachusetts legislature, which appropriated $25,000 as an initial fund for the purpose in accordance with a plan submitted by the state Board of Education. The preferred title of "state-service extension teaching" expresses more exactly the scope of the work, which is, however, the direction toward which the extension service as developed from state universities has recently tended. The methods to be employed in the new system, namely, correspondence courses, field agents, local study clubs and itinerant professors, have all been successfully employed by other agencies. The unique features of the Massachusetts enterprise are its independence of all existing institutions and the popular aim of its service. In the programme emphasis is placed first upon instruction in "vocational preparedness," and second upon the intellectual advancement of the great army of "industrials." Dr. Snedden, state commissioner of education, has in mind also the needs of public officials who desire training for administrative work. These purposes, however, will not exhaust the teaching resources, which are intended to reach adult persons throughout the state. The work has been placed under the direction of Dr. J. H. Moyer who has had large experience in similar work in other states.

University Surveys.—The final outcome of the educational survey in Vermont (*A. Y. B.*, 1914, p. 775), conducted by the Carnegie Founda-

tion in response to a call from the state authorities, has been the adoption of a new code reorganizing the educational system of the state. This measure is related to the present topic by a single item. It will be recalled that the report of the investigation advises that the relations of the state to the higher institutions subsidized from the public treasury should cease. The new code provides for maintaining public supervision over all state funds, inspection of all institutions which receive money from this source, and approval of the budgets for their expenditures. At the same time special acts have been passed by the legislature in the interests of the three subsidized institutions. Middlebury College and Norwich University are to receive the same sums as before; the appropriation for the University of Vermont was increased by $6,500, intended for the College of Medicine. By this action the state of Vermont takes the ground that higher education is a public service and even when committed to private institutions should be fostered by the state with proper safeguards for the use of public funds.

The survey of the University of Wisconsin overshadows all other events of the same nature. By its relation to the state this University has been drawn into public directive services and hence it was naturally included in an investigation pertaining to all administrative departments ordered by the state Board of Public Affairs. In providing for the survey of the University the coöperation and assistance of representative organizations in the state was solicited and received, and an advisory committee composed of members nominated by these organizations was formed. The Board engaged William H. Allen of the Bureau of Municipal Research, New York City, and E. C. Branson of the University of North Carolina to assist in the survey and to make detailed investigations along certain lines. The coöperation of the University itself was secured, and representative men in business and professional circles were freely consulted. As the work progressed the investigators submitted voluminous reports to the state board, which were in turn submitted to the University for comparison with records and for comment. The investigation was prolonged and searching, and the report, a volume of above 950 pages, consists of detailed studies of all phases of the university organization and operations, together with the comment of the University itself upon the findings of the investigators. The report, therefore, is an exhaustive study of university functions, administrative and scholastic, displaying on the one side critical acumen and on the other illuminating interpretations. The press and educational journals have made the public fully acquainted with the spirit that animated the expert investigators and with the confident attitude of the University during this trying ordeal. The event has national importance because the "Wisconsin idea" has been accepted, even in foreign countries, as the symbol of university service in a democracy.

As a result of the investigation several measures were passed by the legislature, immediately affecting the University. A state Board of Education was created, consisting of the governor, the secretary of state, and the state superintendent of public instruction as *ex-officio* members, one member to be appointed by the board of regents of the University and one by the board of regents of the normal schools. This board is charged with the management of all the financial affairs pertaining to public education in the state, including the University. A supplemental act provides that all money appropriated for the purposes of public education, including that specifically intended for the University, shall be controlled by the new state board. In the opinion of many familiar with the situation, political influences are thus made paramount in the direction of the University, an opinion strengthened by the fact that the University appropriation bills for the year were cut about 10 per cent. Upon an appeal of the University authorities, however, an act supplementary to the appropriation bill was passed authorizing the use from unexpended moneys of such additional amounts as may be necessary to con-

duct any state department, including the University, in the customary manner, the necessity in each case, however, to be determined by the governor, secretary of state and state treasurer.

Academic Freedom.—The question of academic freedom, in the sense of "liberty of teaching" and in the larger sense of the exercise of independent judgment on the part of professors, has been forced during the year outside of scholastic circles into the arena of public discussion. The two most striking events bearing upon this question have fixed attention upon the University of Pennsylvania, one of the oldest and most distinguished private foundations in the country, and the University of Utah, one of the smaller of the state institutions.

At their annual meeting in June the trustees of the University of Pennsylvania voted not to reappoint Dr. Scott Nearing for the ensuing year. Dr. Nearing had served as assistant professor of economics for one year in the Wharton School of Finance and Commerce, having been promoted from an instructorship to the more important position. Since his abilities as a teacher were not questioned, it has been generally assumed that the vote against him was due to his public support of child-labor laws and his indictment of various forms of industrial injustice. The case was regarded as of sufficient importance to call for an investigation by a committee of the American Association of University Professors whose findings have not yet been submitted. Meanwhile statements of Dr. Nearing on the one side and those of the University authorities on the other are accessible to the public in many journals. When the agitation was at its height the trustees of the University publicly declared that the dismissal had absolutely nothing to do with the question of "academic freedom of speech." Subsequently a petition was addressed to the trustees signed by 15 instructors in the Wharton School and upward of 75 graduate students of the University. In this petition, as quoted in the press, the signers entered an emphatic protest against any action of the board of trustees and of the small group in control of the General Alumni Society which infringe upon the freedom of thought and expression of our instructors. . . . As a basis for future research, it is essential that we be familiarized with every important school of thought, no matter how new or how contrary to current preconceptions it may be. Professors, therefore, must be wholly free, after careful study and analysis, to tell the truth as they themselves see it.

An interesting sequel to this case is the call extended to Dr. Nearing to the chair of social sciences in the recently established University of Toledo, O.

The University of Utah case, as it is known, centers in the resignation of 17 members of the faculty as a protest against certain acts of the president. The reasons for this unusual course are given in the following statement signed by 16 of those who resigned:

> The immediate cause of our resignations was the dismissal of certain of our colleagues and the demotion of others by a method so unfair and so arbitrary as to make it impossible to retain our self-respect and remain in the University. It is our firm belief that the changes made by the administration are but the expressions of a general policy of encroachment on our academic rights and duties by certain interests which are seriously threatening the efficiency of the University.

A principle of such vital concern was involved that the council of the American Association of University Professors undertook a thorough investigation of the case in order to arrive at an impartial judgment in the matter. The findings of the committee of inquiry are distinctly adverse to the action of the president of the University, and the declarations made by the governing body of the University appear to the committee "equivalent to a formal announcement that considerations of equity have not been, and will not be, taken account of by the board, in cases involving the relations of the president of the University and the faculty." The representative character of the members of the committee adds great weight to their decision.

New Associations.—The interests of higher education have been effectively promoted in this country by the long established Association of American

Universities and the National Association of State Universities. The need of a more specialized society was first realized in connection with the colleges endowed by the land grant, and as a result the Association of American Agricultural Colleges and Experiment Stations was formed. The new interests that have arisen under the pressure of recent activities are reflected in the formation during the year of the Association of Urban Universities, the Association of American Colleges, and the American Association of University Professors.

Miscellaneous Events.—Dr. Elmer E. Brown, chancellor of New York University, has announced a system of fellowships which will enable a limited number of college graduates to combine scientific study with actual business practice. Openings for this purpose are available for special students in some of the largest companies in the country, which agree to pay men employed under the plan a sufficient sum to cover living expenses and tuition. This is offered as a university fellowship. The holders divide their time between practical work and the study of business subjects in the university.

Commencement day at Harvard University was marked by the formal presentation of the Widener Memorial Library to the university officials. When the hundreds of thousands of volumes that make up this collection are shelved in the building, Cambridge will become a resort for scholars from all over the world. (See also *Libraries, infra.*)

The service of exchange of professors between American and European universities was seriously interrupted by the war. Many foreign professors, however, were heard at various universities. Among them was Prof. George Sarton of Belgium, who delivered a series of lectures before the advanced French classes of the George Washington University. M. Eugene Brieux, the celebrated dramatist and member of the French Institute, was heard at several colleges; special interest was excited by his lecture on the "Problem Play" delivered at Smith College at the close of 1914.

A system of exchange professors has been organized by the University of North Carolina between that institution, Vanderbilt University, the University of South Carolina, and the University of Virginia.

The Catholic University, Washington, D. C., celebrated the twenty-fifth anniversary of its founding on April 15, in the presence of a large assembly and the greatest company of the hierarchy ever before brought together in this country.

Alleghany College, Meadville, Pa., celebrated its one-hundredth anniversary June 19-24. The occasion was marked by conferences on the functions of the American college in which eminent representatives of higher education participated.

An important event of the year was the celebration of the seventy-fifth anniversary of Bridgewater Normal School, one of the three institutions of that kind established under Horace Mann's impulse in Massachusetts.

Johns Hopkins University opened the fall term in its new buildings on the beautiful site at Homewood.

Dr. Frank Johnson Goodnow was inaugurated president of Johns Hopkins University on May 21 in the presence of a notable gathering. On that occasion the honorary degree of LL. D. was conferred on a select number of men distinguished in public affairs, in science and in philosophy.

William Spenser Currell was inaugurated president of the University of South Carolina on Jan. 28.

Dr. Henry Noble McCracken was inaugurated president of Vassar College on Oct. 13.

Dr. John Henry McCracken, professor of political philosophy in New York University and brother of the above, was elected president of Lafayette College, Easton, Pa.

Dr. Henry Suzzallo, professor of the philosophy of education in Teachers College, Columbia University, has been appointed president of the University of Washington.

Dr. Ray Lyman Wilbur has been chosen to succeed Dr. John Casper Branner as president of Leland Stanford University. The latter retires upon his own initiative in January, 1916.

PROFESSIONAL EDUCATION

Statistics of Professional Schools.—The following table summarizes the statistics of professional schools as reported in 1914:

Class	Schools	Instructors	Students	Increase (+) or decrease (—)	Graduated in 1914	Students having a degree
Theology	176	1,516	11,269	+ 304	1,886	4,173
Law	122	1,471	20,958	+ 80	4,496	4,215
Medicine	100	6,955	16,920	— 298	4,048	2,468
Dentistry	50	1,532	9,315	+1,300	2,270	199
Pharmacy	72	744	5,930	— 235	2,290	91
Veterinary medicine	22	364	2,481	+ 157	686	27
Total	542	12,582	66,873	.....	15,686	11,173

Class	Value of grounds and buildings[1]	Endowment funds[1]	Benefactions[1]	Total receipts[2]	Volumes in libraries[1]
Theology	$25,462,737	$40,693,181	$1,558,281	$4,246,501	2,719,075
Law	5,293,563	2,276,013	203,067	1,831,163	1,059,124
Medicine	28,176,575	21,050,255	7,113,920	11,450,393	741,771
Dentistry	3,335,967	461,915	31,000	1,114,634	62,742
Pharmacy	2,414,102	205,000	2,527	568,130	90,455
Veterinary medicine	1,557,163	.....	27,564	397,940	20,172
Total	66,240,107	64,686,364	8,936,359	19,608,761	4,693,339

[1] So far as reported. [2] All sources.

Legal Education.—The present movement for raising the standard of legal education in the United States was begun by the Harvard Law School, which in 1899 announced among its admission requirements the completion of a college course. Pennsylvania will enforce the same condition in the session of 1915-16. Five other universities, Columbia, Chicago, Leland Stanford, Western Reserve and California, require for admission to the law departments either completion of a college course or of three years of such a course in a combined college law course. Several other universities require the completion of two years of a college course for entrance into their respective law schools. North Dakota has announced the requirement of two years of the college course beginning with 1917, and many other universities which already require one year of the college course are preparing to extend the time. This movement is accompanied by an increase in the requirements for graduation in law. According to an investigation made in 1893, out of a total of 52 law schools reporting, only nine offered a three-years' course of instruction and five schools conferred a degree at the end of one year. From statistics for 1913-14 pertaining to 122 law schools, it appears that only one school offered a course of one year, 17 required a two-years' course for graduation, while the remaining schools required at least three years. The scope of legal education has been so greatly extended that the Association of American Law Schools, in its annual meeting in December, 1914, seriously considered the policy of requiring four years of study. The objections to this extreme measure are obvious; to meet the actual demand for extended instruction, several institutions, notably, Harvard and Michigan, arrange for an optional fourth year, leading to a second degree in law.

Medical Education.—The decade 1904 to 1914 was one of great development in medical education. Against the excess in numbers and the low standards of medical colleges, which prevailed in the earlier year, the American Medical Association started a campaign of reform. With the aid of other agencies it has forced out of existence above 80 schools of low grade and raised the standard of all others. In 1904 only four medical schools required for admis-

sion any preliminary education beyond the high school; the majority required even less. At present 84 schools require one or more years of college work and in several others this requirement will take effect in 1916. Following the lead of the colleges themselves 25 states have adopted for medical license the requirement of one or two years of college education in addition to a four-years' high school course. Seven of the 50 require two college years. In 31 states degrees granted by low-grade medical colleges are not accepted as qualification for license to practice.

The rise of admission standards has been accompanied by improvement in medical education. The medical department of Johns Hopkins University recently limited the enrollment in each class to 90 students, and in 1915 the Rush Medical College, affiliated with the University of Chicago, has announced the limit of 100 students for each of the first and second year classes and 120 students each for the third and fourth years. Several medical colleges have voluntarily discontinued the clinical years of the complete course for lack of facilities for this practical instruction. Such action was taken in 1915 by the medical school of Dartmouth College, the fourth established in the United States and with a record of degrees granted for 103 consecutive years.

The need of full-time service for clinical professors has led to several experiments of great interest. The latest is the plan of placing medical chairs on a high-salary basis, leaving the incumbent free to practice but with the fees accruing to the school. For this purpose the General Education Board donated in 1914 one and a half million dollars to the Johns Hopkins Medical School, and more recently the sum of $750,000 has been secured to Washington University Medical School (St. Louis) and $500,000 to Yale Medical School for the same purpose.

Graduate courses leading to a degree of doctor of public health have been established in ten medical schools, and graduate schools of medicine have been organized by the state universities of Alabama, California and Minnesota, and by Harvard University and Tulane University (New Orleans).

These developments explain the movement for closer relations between medical colleges and hospitals. The completion or extension of hospital buildings on or in immediate proximity to medical schools is a notable feature of the year's progress. The centers thus newly equipped for clinical service include the medical schools or departments of Harvard University, University of Cincinnati, Western Reserve University, University of Indiana, Northwestern University (Chicago), Vanderbilt University, Washington University (St. Louis), and University of California.

The number of large endowments recently given for the promotion of medical education and research has been increased during the year by the action of the Mayo brothers in placing at the disposal of the University of Minnesota the resources of the Mayo foundation at Rochester in that state. This gift practically amounts to an endowment of $2,000,000, together with unrivalled equipment for medical investigation. The arrangement is to continue for six years and at the end of that time the University will have full control of the foundation. Plans have also been considered for the creation of a great center of medical training at New York City through a union of the Presbyterian Hospital and Columbia University; the cost of this project is estimated at $16,000,000.

EDUCATIONAL FOUNDATIONS AND ASSOCIATIONS

General Education Board.—This corporation, created by act of Congress approved Jan. 12, 1903, has for its object the promotion of education within the United States. The current annual report submitted to the Secretary of the Interior shows that on June 30, 1915, the principal funds belonging without restriction to the Board amounted to $33,958,848. The income from these funds, together with the income from the undisbursed

income, amounted during the year to $2,230,425.41. The balance of income from previous years as of June 30, 1914, amounting to $5,676,678.01, increased the total to $7,454,289.09. The following were appropriations made by the Board for the fiscal year ending June 30, 1915:

Schools and colleges	$1,021,425.97
Southern farmers' coöperative demonstration work.	15,947.52
Girls' canning and poultry clubs	17,345.92
Farmers' coöperative demonstration work, Maine and New Hampshire	24,104.21
Maine boys' and girls' clubs	4,491.62
Rural school agents and service	29,988.80
Negro rural schools	24,877.39
Salaries and expenses of professors of secondary education	35,119.98
Lafayette College	257.72
Richmond College	991.86
Other appropriations	5,079.20
Expenses	61.692.91
Total	$1,241,233.10

Undisbursed balance June 30, 1915, $6,011,563.64.

Since the report was rendered, additional gifts to colleges have been made to the amount of $375,000. Funds have been provided also for educational investigations, the Gary system and the Hampton Institute system having been selected as the first subjects for examination.

The John D. Rockefeller special fund has all been appropriated, excepting the income from unpaid balances and the profit on invested income amounting to $788,670.70; from this was disbursed $20,000 for the University of Chicago, and for expenses $836.57, leaving a balance of $717,834. From the report of 12 years' donations it appears that through the General Education Board Mr. Rockefeller has provided over $73,000,000 for education.

Carnegie Foundation for the Advancement of Teaching.—The ninth annual report of this fund brings the record of its activities through the fiscal year ending Sept. 30, 1914. The income from the general endowment fund was $696,038.60; income from the educational inquiry fund, $50,358.34. The total expenditures from the former amounted to $669,533. At the close of the year there were in force 432 allowances at an expenditure of $687,370. The endowment fund held in trust was $14,129,000, and the fund for the division of educational inquiry, $1,250,000.

Jeanes Fund.—The income of the Anna T. Jeanes fund added to the balance in hand amounted to $17,910; of this $8,812.70 was apportioned to various schools. The Fund coöperates for the improvement of negro rural education with public-school superintendents in 14 states and 133 counties. The supervising industrial teachers maintained visited during the year 3,463 country schools and raised for rural-school improvement $73,438.

National Education Association.—The fifty-third annual convention of this Association was merged into the third International Congress on Education held at Oakland, Cal., Aug. 16-25. The attendance was very large and 31 foreign countries were represented by official delegates. Altogether 12 general meetings and 54 departmental meetings were held. At the former the subject of international relations was prominent in the addresses and special interest was excited by the address of the delegate from France, Dr. Ferdinand Buisson, well known in America for his great service to the cause of education. His subject was that of moral education in the French schools, to which he attributed in large measure the present unity of the French people.

As on previous occasions, the choice of president excited intense rivalry between different factions. It was harmoniously settled, the vote being recorded for Dr. David B. Johnson, president of the Winthrop Industrial and Agricultural College of South Carolina.

Other Associations.—The National Council resolved itself at Oakland into a congress on educational investigations. The department of superintendence considered the subject of national standards in education, in continuance of the topic from the February meeting held at Cincinnati. On that occasion ex-President Taft made an address advocating a national university which might become a standardizing center. The American Institute of Instruction held its eighty-fourth annual meeting at Cambridge in July. A feature of the proceedings was the conference on

school administration, conducted by Prof. Paul H. Hanus of Harvard University. Among the many associations convening at Oakland during the summer was the American Association for the Advancement of Science, which for the first time held its annual meeting west of the Rocky Mountains.

Panama-Pacific International Exposition.—The Panama-Pacific Exposition was in itself an educational event of great moment, and although the education section suffered loss by reason of the European catastrophe, it was rich in material pertaining to the western continent and to the Orient. The collections from the United States were purposely select, the plan of representing the great features of modern education by typical exhibits having been successfully carried out. The photographic displays were unusually fine and gained vivid reality by use of the motion pictures. In effectiveness the section surpassed the more elaborate exhibits of previous world expositions.

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LIBRARIES

James I. Wyer, Jr.

Statistics of Libraries.—The U. S. Bureau of Education issued during 1915 its quinquennial summary of statistics of American public and school libraries in 1913, which shows the following totals:

Libraries with	Number	Total Volumes
300 to 1,000 vols.....	5,384	2,961,007
1,000 to 5,000 vols.....	5,453	11,689,942
Over 5,000 vols.....	2,849	75,112,935
Total.....	13,686	89,763,884

Besides there are about 2,500 still smaller libraries, the returns from which were not compiled.

The greatest growth in the five-year period was in the large libraries in the North-Atlantic states, where are found 1,263 of the 2,849 libraries with more than 5,000 volumes, containing 36 of the 75 million volumes in such libraries. There is, in the figures presented, much collateral evidence showing the increasing public influence of libraries, especially the extensive activities so prevalent

in both city and country. The ten largest libraries are:

	Volumes
New York Public Library	2,133,608
Library of Congress	2,128,255
Harvard College	1,333,123
Yale	1,078,000
Boston Public Library	1,049,011
Brooklyn Public Library	735,848
Columbia University	711,127
New York Public School Libraries	661,519
Chicago Public Library	614,259
Chicago University	532,503

A typical and graphic instance of the rapid increase of free libraries and book facilities in this country in the past 20 years is offered by the figures for New York State Libraries:

Year	Number	Volumes	Circulation		
			Total	Per Day	Per 1,000 Population
1893	238	849,995	2,293,861	6,285	352
1894	293	1,049,869	2,766,973	7,581	425
1895	309	1,127,199	3,146,405	8,620	483
1896	351	1,313,299	3,933,623	10,777	604
1897	375	1,446,874	4,904,793	13,438	753
1898	408	1,755,036	6,439,999	17,644	989
1899	431	1,979,319	7,395,527	20,262	1,135
1900	460	2,187,125	8,452,445	23,157	1,163
1901	529	2,425,260	9,232,697	25,350	1,270
1902	550	2,598,472	10,063,703	27,571	1,385
1903	555	2,804,628	10,897,126	29,855	1,500
1904	573	3,108,365	11,347,802	31,089	1,561
1905[1]	377	2,953,177	11,685,889	33,115	1,663
1906	678	3,645,662	13,835,639	37,906	1,715
1907	661	3,782,609	14,968,722	41,010	1,855
1908	686	4,050,563	16,479,457	45,146	2,043
1909	689	4,227,665	18,747,849	51,364	2,324
1910	710	4,341,103	19,254,729	52,753	2,387
1911	661	4,635,716	20,122,745	55,131	2,208
1912[1]	464	4,421,901	20,309,176	55,641	2,228
1913[1]	477	4,707,472	21,530,294	58,987	2,362
1914[1]	493	5,074,650	22,918,026	62,762	2,515
1915[1]	536	5,330,826	26,003,009	71,241	2,853

[1] Libraries of high schools and academies not included.

In reading the table it must be noted, as indicated in the footnote, that until 1912, with the single exception of 1905, the summaries include statistics for school libraries which were free for circulation, as well as independent free libraries; whereas in 1905, and since 1911, they are confined to the latter only. The school libraries free for circulation in 1905 numbered 278, their volumes 484,699 and their circulation 400,927. Figures approximating these should therefore be deducted from the summaries of former years when comparison is made with those of the last three years. With this in mind, it will be seen that for 22 years, without one exception, the free libraries of the state have been making unbroken progress, their stock of books being now six times greater than in 1893, their per capita circulation eight times greater and their total circulation eleven times greater. With a growth of 52 per cent. in the population of the state there has been a growth of 600 per cent. in the stock of free library books and of 1,000 per cent. in their public use.

Legislation.—The year's laws are mainly significant as pointing the direction of library development. No single act of high importance has been passed. A general library law was enacted in West Virginia, allowing a municipal corporation to tax itself for the establishment and maintenance of a public library; North Dakota, following the administrative model of New York, created a Board of Regents to supervise all educational interests and institutions, including libraries, and this act (Chs. 237-38, Laws of 1915), while abolishing the existing library commission, gives the state's library work an appropriate organic relation and doubtless makes even better provision for its conduct. Slight but steady net increases are noted in all library appropriations for state work. A new law in Illinois increasing the maximum tax levy for library purposes in cities, while merely in accord with precedent in all states, is of special interest as giving promise of ampler library revenues for the city of Chicago, where development of the public library has long been greatly restricted for lack of funds. Legislation enacted or attempted in many states looking toward township or county libraries, emphasizes sharply the tendency to make these larger political areas the unit for library service and administration in rural regions.

Meetings.—Despite sporadic individual protests, librarians continue to find definite profit and vastly strengthened *esprit de corps* in frequent local and national gatherings. Easily and always first among such is the annual conference of the Ameri-

can Library Association, held in 1915 at Berkeley, Cal., June 3-9, as guests of the University of California and under the presidency of Hiller C. Wellman of the Springfield (Mass.) City Library Association, with an attendance of 779. Mr. Wellman's address reflected a very palpable conservatism in estimating the true function of the public library. While it did not in set terms disapprove a multitude of latter day library activities (some of them rather hippodromic), yet the implication was obvious that exhibits, museums, games, dances, parties, fly-swatting contests, victrola recitals, moving pictures, and other similar work widely done in the name of the public library were distinctly apart and aside from its fundamental obligation—that of making accessible to all men the best thought of mankind whether found in the classic works of an older civilization, in the master intellects of a later day or in the lesser current writing of the hour. This conservatism was reinforced by Dr. Herbert Putnam, Librarian of Congress, in a stimulating address "Per Contra," which maintained that the provision of large quantities of current and certainly ephemeral fiction was neither a necessary, economical nor wholesome function of the library. Dr. Putnam was indeed one with Emerson so far as this class of book is concerned in definitely suggesting that libraries would do well to buy no novels less than a year old.

The "Papers and Proceedings" form the July, 1915, number (358 p.) of the Association's *Bulletin*.

In electing Miss Mary W. Plummer president, the Association for the second time chose a woman for this post. The other officers named are: vice-presidents, Walter L. Brown and Dr. Chalmers Hadley; secretary, George B. Utley; members of executive board, M. S. Dudgeon and Samuel H. Ranck.

Through an energetic committee the Association presented an interesting and highly creditable exhibit at the Panama-Pacific International Exposition.

Other important meetings were those of the New York Library Association at Squirrel Inn, Catskill Mountains (Sept. 25-Oct. 2), the Pennsylvania—New Jersey Associations in Atlantic City (March 5-6) each with an attendance of about 250, the Madison (Wis.) summer conference (July 22-31); and the annual midwinter meetings of a half dozen library bodies at Chicago in New Year's week. All of these attract workers from a dozen or more states and some have programmes as rich and substantial as the national conference.

Buildings.—The dedication and occupancy of the Widener Memorial Library at Harvard gives ample, safe and splendid housing to the largest and richest college library in the land (for full description of the building see *Library Journal*, xl, 325). By the building of the central part at a cost of $200,000 with a capacity for 210,000 volumes and 250 readers, the University of Missouri makes a promising start towards adequate accommodation for its growing libraries. Trinity College, Hartford, dedicated a convenient and handsome building in November, 1914. On April 27, the St. Paul Public Library was destroyed by fire, involving a loss of 130,000 volumes. The building and contents were valued at $450,000, insured for $259,000. A new and better building is under construction.

A striking and, in certain æsthetic aspects, a deplorable example of the influence of private benevolence on the public architecture of an entire country is observed in the printed circular, "Notes on the Erection of Bildings," issued by the Carnegie Corporation as a suggestive guide to communities receiving Carnegie gifts. Excellent as is the advice and experience summarized and set forth in the text and plans, it is undeniable that such pressure from this particular source must have done much to standardize the construction and exteriors of small library buildings and to produce the now familiar Bibliotheca Carnegiana as a distinct architectural type.

Book Buying.—An interesting experiment in coöperative international book buying has just been completed by seven American libraries which for two years have maintained a traveling agent in South America.

He visited every country on that continent and spent about $36,000 for 9,000 volumes, 30,000 newspapers and 17 manuscripts, assessing the cost equitably among the participants. The *Northwestern University Bulletin* for Sept. 3, 1915, is given over to a full account of this journey.

Necrology.—E. S. Willcox, for 24 years librarian of the Peoria (Ill.) Public Library, died March 30 (*Lib. Jour.*, xl, 330). Esther E. Burdick, for 20 years librarian of the Jersey City Public Library, died May 25. George T. Little, for 32 years librarian of Bowdoin College, died Aug. 6. Luther S. Livingston, librarian of the Widener collection, Harvard College Library, died Dec. 23, 1914 (*Lib. Jour.*, xl, 145); he is succeeded in that new and interesting post by George P. Winship. John Edmands, dean of American librarians, died Oct. 17, aged 95.

Appointments.—The more important appointments of the year are those of Willard Austen, librarian of Cornell University in succession to George W. Harris, retired as librarian emeritus after a continuous service of 42 years; W. W. Bishop, librarian of the University of Michigan; Paul M. Paine, librarian of the Syracuse (N. Y.) Public Library, succeeded Dr. E. W. Mundy, retired after 35 years; C. B. Galbreath reappointed librarian of the Ohio State Library (a position which he successfully filled from 1896 to 1911) after a pathetic interregnum due to partisan politics; Joseph L. Wheeler, librarian of the Reuben McMillan Free Library, Youngstown, O.; Herbert S. Hirshberg, librarian of the Toledo (O.) Public Library; Asa D. Dickinson, library organizer for the province of the Punjab, India, under appointment from the University of Lahore.

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XXXIII. CHRONOLOGY AND NECROLOGY

AMERICAN CHRONOLOGY

JANUARY

2.—The Senate passes the Immigration bill with amendments.

Four German reservists travelling under false passports are taken from the Norwegian-American liner *Bergenfjord* in New York Bay.

4.—The Hamburg-American liner *Dacia,* purchased by Edward N. Breitung, is admitted to American registry.

5.—The U. S. Supreme Court hands down a final decision in the Danbury Hatters Case affirming the decision of the lower courts.

6.—Representative A. Mitchell Palmer of Pennsylvania charges Senator Boies Penrose with bribery and corruption before the Senate Committee on Privileges and Elections.

A fire in the New York subway, due to defective insulation, causes one death and injuries to more than 200 persons.

7.—The House rejects the Senate amendment to the Immigration bill providing for the exclusion of negroes.

Great Britain replies to the protest of the United States on interference with American commerce.

8.—President Wilson defends his policies and attacks the Republican party in a Jackson Day speech at Indianapolis.

9.—General Villa signs an agreement with Gen. Hugh L. Scott at El Paso, Tex., to end conditions on the Mexican border threatening American territory.

12.—The House rejects a constitutional amendment extending the suffrage to women.

Eighty of 114 men indicted for election frauds in Terre Haute, Ind., plead guilty.

14.—Governor Blease of South Carolina resigns, five days before the expiry of his term.

18.—The Senate rejects a resolution designed to provide for prohibition in the District of Columbia.

19.—One striker is killed and 19 shot by guards at the Liebig Fertilizer Works at Carteret, N. J.

The U. S. Supreme Court issues an order suspending the execution of the death sentence on Leo M. Frank, twice convicted of murder in the Georgia courts.

22.—President Wilson holds a hearing on the Immigration bill.

Twenty-eight deputy sheriffs on guard at the Liebig Fertilizer Works at Carteret, N. J., are arrested, charged with the murder of strikers.

23.—The Senate Democrats in caucus make the Ship Purchase bill a party measure.

24.—Secretary of State Bryan publishes a letter to Senator Wm. J. Stone (Mo.) defending the United States Government against charges of discrimination against Germany and her allies.

25.—Germany protests to the United States against the sale of hydroaeroplanes to the Allies.

The German collier KD-3, formerly the British collier *Farn,* is interned at San Juan, Porto Rico.

Telephone communication is established between New York and San Francisco, a distance of 3,400 miles.

28.—President Wilson vetoes the Immigration bill.

The German auxiliary cruiser *Prinz Eitel Friedrich* sinks the American bark *William P. Frye* in the South Atlantic.

29.—Secretary Bryan informs the German Ambassador that hydroaeroplanes sold to belligerents cannot be classed as war vessels.

31.—The American steamship *Dacia,* formerly of the Hamburg-American Line, sails from Galveston with cotton for Rotterdam.

FEBRUARY

1.—Seven Democratic opponents of the Ship Purchase bill desert the Administration and move to recommit the bill.

The Canadian Government agrees to pay $15,000 in settlement of claims for the shooting of two American hunters on the Niagara River by Canadian militiamen.

The Cunard liner *Orduna,* Liverpool to New York, touches at Queenstown flying the American flag.

2.—The Jones Philippines bill is reported to the Senate with a recommendation for immediate passage.

Werner Horn, a German, attempts unsuccessfully to blow up the Canadian-Pacific Railroad bridge at Vanceboro, Me.

4.—The House fails to pass the Immigration bill over the President's veto.

A caucus of the House Democrats reelected to the Sixty-fourth Congress renominates Champ Clark for speaker and chooses Claude W. Kitchin (N. C.) as Democratic floor leader.

6.—The Cunard liner *Lusitania* arrives at Liverpool, having flown the American flag during her passage through the Irish Sea.

9.—The American steamer *Wilhelmina* with a cargo of food for Germany puts into Falmouth, England.

10.—The Senate adjourns the debate on the Ship Purchase bill after a continuous session of 52 hours, 10 minutes.

Great Britain replies to the American

note of protest on the seizure and detention of American cargoes destined for neutral European ports.

The United States sends a note to Germany warning her that she will be held to strict accountability for unjustified attacks on American shipping; and a note to Great Britain protesting against the use of the American flag by British vessels.

11.—The Interstate Commerce Commission in part reverses an earlier ruling in the intermountain rate cases.

The cargo of the American steamer *Wilhelmina* is seized at Falmouth, England, and held for a British prize court.

12.—Henry van Dyke, U. S. Minister to The Netherlands and Luxemburg, reports interference by German officials with his diplomatic correspondence with Luxemburg; the United States sends a protest to the German Government.

13.—The Senate Democrats in caucus agree to press a special rule for the limitation of debate on the Ship Purchase bill.

15.—The House passes the Child Labor bill, prohibiting the shipment of the products of child labor in interstate commerce.

A caucus of the House Democrats agrees on a compromise Ship Purchase bill.

16.—The House passes the Ship Purchase bill as an amendment to a bill already adopted by the Senate.

Germany presents a note to the United States agreeing to modify its policy of submarine warfare in case England permits the shipment of foodstuffs to Germany for the use of civilians.

18.—The Ship Purchase bill adopted by the House is sent to conference.

The Cotton Futures Act goes into effect.

19.—Great Britain replies to the American notes relating to the use of neutral flags and the seizure of the *Wilhelmina*.

20.—The United States addresses to the German and British Governments identic notes proposing a *modus vivendi* for the termination of the German submarine warfare and the British food blockade.

The American steamer *Evelyn*, with cotton for Bremen, is sunk by a German mine off Borkum Island.

The Panama-Pacific International Exposition is opened at San Francisco.

22.—President Wilson nominates Joseph E. Davies, Edward N. Hurley, Wm. J. Harris, Wm. H. Parry and George Rublee as members of the Federal Trade Commission.

23.—The U. S. Supreme Court hands down a decision limiting the power of the Interstate Commerce Commission to search and seize private papers of railroad companies.

The American steamer *Carib*, with cotton for Bremen, is sunk by a mine off the German coast.

25.—The Senate adopts an amendment to the Agricultural Appropriation bill establishing a Federal system of rural credits.

27.—The Ship Purchase bill is reported to both Houses and in the Senate is definitely abandoned.

28.—The American steamer *Dacia*, with cotton for Germany, is seized by a French cruiser in the English Channel and taken to Brest.

MARCH

1.—Germany replies to the note of the United States proposing a *modus vivendi* with Great Britain with a qualified acceptance of its suggestions.

A Federal grand jury at New York indicts five officials of the Hamburg-American Line for conspiracy to defraud the United States in swearing to false manifests to secure clearance papers for vessels dispatched to supply German warships on the high seas.

2.—The Senate confirms the nominations of Joseph E. Davies, Edward N. Hurley, Wm. J. Harris and W. H. Parry as members of the Federal Trade Commission.

President Wilson nominates Robert W. Woolley of Virginia as Director of the Mint.

An explosion in the Leyland mines of the New River and Pocahontas Consolidated Coal Co., near Quinnimont, W. Va., causes the death of over 100 miners.

3.—Both Houses of Congress pass a resolution extending the power of the President to protect the neutrality of the United States.

President Wilson nominates Samuel Lyle Rogers of North Carolina as Director of the Census.

A Federal grand jury at Boston finds three indictments against Werner Horn, dynamiter of the international railway bridge at Vanceboro, Me.

A slide in Culebra Cut closes the Panama Canal to navigation.

4.—The Senate confirms the promotions of Col. George W. Goethals and Brig.-Gen. Wm. C. Gorgas to the rank of major-general, and of Col. H. F. Hodges and Col. Wm. L. Sibert to the rank of brigadier-general.

President Wilson signs the Seamen's Act.

The third session of the Sixty-third Congress ends.

5.—The United States addresses notes to Great Britain and France asking for details of the plan for cutting off Germany's seaborne trade.

6.—President Wilson appoints George Rublee of New Hampshire a member of the Federal Trade Commission during the recess of Congress.

8.—The U. S. Supreme Court hands down decisions in the North Dakota and West Virginia rate cases.

Oscar Wenderoth, Supervising Architect of the Treasury Department, resigns as of June 1.

Carl Ruroede at New York pleads guilty to passport frauds and is sentenced to three years' imprisonment.

10.—President Wilson raises to the rank of admiral Rear-Adms. Frank F. Fletcher, Thos. B. Howard, and Walter C. Cowles.

The German auxiliary cruiser *Prinz Eitel Friedrich* enters the port of Newport News, reporting the sinking of 11 vessels, among them the American bark

William P. Frye, in the South Atlantic on Jan. 28.

11.—Governor Whitman of New York signs charges of neglect of duty against the chairman and three other members of the Public Service Commission of the First District.

The Central Railroad of New Jersey is found guilty by a jury in the Federal court at Trenton, N. J., on 185 counts charging rebating to the Lehigh Coal & Navigation Co.

13.—The U. S. Circuit Court of Appeals at Cincinnati reverses the conviction under the Sherman Act of 27 officials of the National Cash Register Co.

15.—Great Britain delivers replies to the American notes suggesting a *modus vivendi* with Germany and inquiring the scope of the proposed blockade.

16.—The U. S. battleship *Pennsylvania* is launched at Newport News.

17.—William Müller, German consul at Seattle, and his secretary are served with warrants of arrest charging conspiracy to obtain business secrets of the Seattle Construction and Dry Dock Co.

21.—The Hamburg-American liner *Odenwald,* attempting to sail from San Juan, Porto Rico, without clearance papers, is stopped by shots from the fortress.

22.—Ratification of the peace commission treaty between the United States and Russia are exchanged at Washington.

23.—The Department of Justice orders a libel of the German steamer *Odenwald* at San Juan, Porto Rico.

25.—The U. S. submarine *F-4* is submerged and fails to rise during target practice off Honolulu harbor.

28.—Leon C. Thrasher, an American citizen, is killed in the sinking of the British steamer *Falaba* by a German submarine in St. George's Channel.

30.—The United States addresses a note to Great Britain on the measures proposed for the blockade of Germany.

J. P. Morgan & Co. conclude arrangements with the French Government for the issuance of $50,000,000 of one-year bonds in the United States.

31.—The governors of the New York Stock Exchange abolish minimum prices for stocks and all restrictions on trading in bonds.

APRIL

5.—The United States demands of Germany reparation for the sinking of the American ship *William P. Frye.*

6.—Germany requests of the United States an investigation of the firing on the German steamer *Odenwald* at San Juan, Porto Rico.

The New York State Constitutional Convention is opened at Albany, under the presidency of Elihu Root.

Wm. Hale Thompson, Republican, is elected mayor of Chicago.

Donn M. Roberts, Mayor of Terre Haute, Ind., and 24 others are convicted of conspiracy and fraud in the election of November, 1914.

7.—Secretary of State Bryan issues a statement recommending the Democratic party to support prohibition in states where the liquor question is an important issue.

8.—The German reply to the demand of the United States for compensation for the sinking of the *William P. Frye* is published at Washington.

10.—President Wilson announces the route selected for government railroad in Alaska.

The German converted cruiser *Prinz Eitel Friedrich* is interned at Newport News.

A German note of April 4 complaining of the failure of the United States to obtain a modification of Great Britain's maritime regulations and of the export of munitions to the Allies is given to the press by the German Embassy.

11.—The German auxiliary cruiser *Kronprinz Wilhelm* enters the harbor of Newport News.

12.—The Riggs National Bank of Washington files with the Supreme Court of the District of Columbia an application for an injunction against abuses of power by the Treasury Department.

It is announced at Washington that a settlement of the *Wilhelmina* case has been reached favorable to the contentions of the owners of the cargo.

Gen. Victoriano Huerta arrives at New York from Spain.

14.—The consent of the British Government to the shipment of two shiploads of German dyes to the United States is announced at Washington.

16.—A strike and lockout in the building trades is begun in Chicago.

19.—The libel suit of William Barnes against Theodore Roosevelt is opened at Syracuse, N. Y.

The U. S. Supreme Court denies an appeal for a writ of habeas corpus for Leo M. Frank, twice convicted of murder in the Georgia courts.

20.—The Chicago, Rock Island & Pacific Railway is put in the hands of receivers.

21.—The United States Government replies to the German note criticizing the attitude of the United States towards the European belligerents.

26.—The commander of the German converted cruiser *Kronprinz Wilhelm* at Newport News declares his intention to intern the vessel.

28.—The United States replies to the German note on the sinking of the *William P. Frye* accepting the offer of payment but dissenting from the German view of justification for the destruction of the vessel.

The appointment of Capt. Wm. S. Benson as Chief of Naval Operations is announced at Washington.

A German aeroplane drops three bombs on the American steamer *Cushing* in the North Sea.

30.—The board of arbitration in the wage dispute of the engineers and firemen of 98 western railroads sign an award granting wage increases.

MAY

1.—The American tank steamer *Gulflight,* Port Arthur, Tex., to Rouen, is torpedoed without warning by a German

submarine off the Scilly Islands, but is towed to anchorage without sinking; the captain and two of the crew lose their lives.

The German Embassy inserts an advertisement in the leading newspapers warning Americans of the danger of traveling on enemy ships in the war zone about the British Isles; the *Lusitania* sails from New York with 1,253 passengers.

3.—The British Ambassador at Washington issues a statement for the guidance of American shippers to neutral countries of Europe.

John R. Lawson, a member of the executive board of the United Mine Workers of America, is convicted at Trinidad, Colo., of the murder of John Nimmo, a deputy sheriff, at Ludlow on Oct. 25, 1913; is sentenced to life imprisonment.

7.—The Cunard liner *Lusitania*, New York to Liverpool, is sunk without warning by a German submarine off Kinsale Head, on the Irish coast, with a loss of 1,153 lives, among them 114 Americans.

10.—President Wilson addresses a large body of newly naturalized citizens in Philadelphia, urging the duty of undivided allegiance and the peaceful mission of the United States.

The German Ambassador transmits a message of sympathy for the loss of American lives in the sinking of the *Lusitania*, placing the responsibility on the British Government.

12.—The German Embassy discontinues its warning advertisement to American travelers.

13.—The United States sends a note to Germany warning her that the American Government will not "omit any word or any act" for the protection of American rights on the high seas.

15.—The Interstate Commerce Commission hands down a decision excluding railroad-owned shipping from traffic on the Great Lakes after Dec. 1.

18.—President Wilson reviews the Atlantic Fleet at New York.

21.—The Supreme Court of the District of Columbia in disposing of many of the pleas for relief of the Riggs National Bank finds the bank guilty of persistent violations of the law.

22.—A jury at Syracuse, N. Y., returns a verdict for Theodore Roosevelt in the $50,000 libel suit brought against him by William Barnes.

24.—A Pan-American Financial Congress is opened at Washington.

25.—The American steamer *Nebraskan* from Liverpool for Delaware Breakwater is torpedoed by a German submarine off Fastnet but returns to Liverpool in safety.

The New York Court of Appeals affirms the conviction of Charles Becker for the murder of Herman Rosenthal.

26.—The Court of Customs Appeals hands down a decision interpreting the Tariff Act to grant a five per cent. discount from duties on imports in American bottoms and in ships of countries entitled to most-favored-nation treatment.

28.—Germany replies to the American note on the sinking of the *Lusitania*, pleading "just self-defense."

JUNE

1.—Germany addresses a note to the United States apologizing for the attack on the American steamer *Gulflight* and offering reparation.

2.—President Wilson receives Count von Bernstorff, the German Ambassador, in conference on the German note.

President Wilson issues a statement warning the leaders of the warring factions in Mexico that the United States cannot permit a state of anarchy to continue indefinitely.

3.—The U. S. District Court of New Jersey hands down a decision against the Government in the suit to dissolve the U. S. Steel Corporation under the anti-trust law.

4.—Dr. Anton Meyer-Gerhard sails from New York as special emissary from Count von Bernstorff to the German Government.

7.—Germany replies to the representations of the United States in the case of the *William P. Frye*, insisting on reference to a prize court.

8.—Wm. J. Bryan, Secretary of State, resigns in disagreement with President Wilson's policy towards Germany.

9.—The second American note on the *Lusitania* is dispatched to Berlin; Wm. J. Bryan leaves the Department of State and Robert Lansing is appointed Secretary of State *ad interim*.

10.—Gustav Stahl, a German reservist, is arrested in New York charged with perjury in testifying that he had seen guns mounted on the *Lusitania*.

The Pacific Mail Steamship Co. announces its intention to dissolve to avoid the burdens of the Seamen's Act.

11.—Wm. J. Bryan issues a statement of his objections to the American note to Germany, simultaneously with its publication.

12.—Dr. Bernhard Dernburg, unofficial leader of the German propaganda in the United States, sails from New York for Norway.

14.—The U. S. Supreme Court declines to review the reversal of the conviction of officials of the National Cash Register Co. under the Sherman law.

A general strike of street and elevated railway workers begins in Chicago.

16.—The street-railway strike in Chicago is ended through the efforts of the mayor, the dispute being submitted to arbitration.

18.—The Swedish Minister to the United States protests against the British censorship of American mails.

19.—The battleship *Arizona* is launched at the Brooklyn Navy Yard.

21.—The Supreme Court declares void the "grandfather clauses" enacted in Oklahoma and Maryland to restrict negro suffrage; the Court hands down a decision holding the coal contracts of the Delaware, Lackawanna & Western Railroad in violation of the Hepburn Act.

Governor John M. Slayton of Georgia commutes to life imprisonment the death sentence imposed on Leo M. Frank for the murder of Mary Phagan in Atlanta.

22.—The British Government issues a memorandum explanatory of its efforts to mitigate the effects of its blockade measures on neutral trade.

The cruiser *Washington* is ordered to Cape Haitien, Haiti, to protect foreign interests.

23.—President Wilson announces the appointment of Robert Lansing as Secretary of State.

General Carranza's reply to President Wilson's proposals for the restoration of peace in Mexico is received at Washington; he refuses again to compromise with Villa.

24.—The United States replies to the German note on the sinking of the *William P. Frye*, requesting reparation without reference to a prize court.

27.—Wm. J. Bryan issues a statement on his conversation with Dr. Dumba, the Austrian Ambassador, which caused the German and Austrian Governments to misinterpret the American attitude on the sinking of the *Lusitania*.

Gen. Victoriano Huerta and Gen. Pascual Orozco are arrested by Federal officials at Newman, N. M., accused of plotting a revolution in Mexico.

28.—The Leyland Line steamer *Armenian* is sunk in attempting to escape from a German submarine off the coast of Cornwall, with a loss of 29 men, several of them Americans.

29.—Austria-Hungary protests to the United States against the exportation of munitions to the Allies.

JULY

1.—Gov. Charles E. Whitman of New York refuses to commute the death sentence of Charles Becker but grants him a reprieve of two weeks.

2.—A bomb placed by Erich Muenter, *alias* Frank Holt, an instructor in German in Cornell University, explodes in the Capitol at Washington, wrecking the Senate reception room.

3.—The U. S. District Court for the Eastern District of Pennsylvania hands down a decision against the Government in the suit under the anti-trust law against the Reading group of railroad and coal-mining corporations.

J. Pierpont Morgan is shot and slightly wounded by Erich Muenter, *alias* Frank Holt, at Glen Cove, Long Island.

Gen. Pascual Orozco escapes from his guards at El Paso, Tex.; General Huerta and five others are arrested on new charges of violating American neutrality.

6.—Erich Muenter, *alias* Frank Holt, the assailant of J. Pierpont Morgan, commits suicide in his cell at Mineola, Long Island.

8.—The German Government replies to the American note of June 10, proposing a compromise to safeguard American lives against danger from German submarine operations.

9.—The Government takes over the new German wireless station at Sayville, Long Island, for operation during the period of the war.

12.—Germany tenders an apology and offer of reparation for the submarine attack on the American steamer *Nebraskan*.

14.—The State Department instructs Ambassador Page to inform the British Government that British municipal enactments will not be accepted as a substitute for international law.

The millwrights on the new plant of the Remington Arms Co. and the structural ironworkers on the new plant of the Remington Union Metallic Cartridge Co. strike.

Harry K. Thaw is declared sane by a jury in the Supreme Court at New York.

16.—Russia announces the conclusion of an arrangement for resumption of exports to the United States.

The Panama Canal is used for the first time by American battleships, the *Missouri*, *Ohio* and *Wisconsin* passing through bound for San Francisco.

A mass meeting of machinists at Bridgeport, Conn., votes to strike unless the Remington Arms Co. grants the demands of striking millwrights.

17.—The United States notifies Great Britain that the rights of Americans in cases before British prize courts rest upon international law and not upon British orders-in-council.

Leo M. Frank is attacked and severely wounded by a fellow-convict at the Georgia Prison Farm at Milledgeville.

20.—The Cabinet decides upon the terms of reply of the United States to Germany's note of July 8.

The machinists of the Remington Arms Co. receive an increase in wages and an eight-hour day and decide not to strike.

The Standard Oil Company's works at Bayonne, N. J., are shut down as a result of a strike of 1,300 foreign employees.

21.—The reply of the United States to the German note of July 8 is dispatched from Washington, warning Germany that further infringements of American rights on the high seas will be considered "deliberately unfriendly."

Serious riots occur in the strike of the employees of the Standard Oil Co. at Bayonne, N. J.

22.—The Interstate Commerce Commission hands down a decision approving increases in express rates.

23.—Great Britain replies to the American note of March 30 protesting against the order-in-council placing an embargo on German trade.

The resignation of James M. Sullivan, U. S. Minister to the Dominican Republic, is announced at Washington.

24.—The excursion steamer *Eastland* capsizes at her pier in the Chicago River with a loss of 852 lives.

25.—The American steamer *Leelanaw*, Archangel for Belfast, is sunk by a German submarine off the Orkneys after search and the removal of the crew.

27.—The United States presents to the German Government a note of inquiry regarding the submarine attack on the steamship *Orduna*.

Four thousand strikers at the Bayonne works of the Standard Oil Co. return to work.

28.—American marines are landed at Port au Prince, Haiti.

29.—Two American bluejackets are killed by Haitian revolutionists attacking Port au Prince.

30.—The battleship *Connecticut* with two battalions of marines is ordered to Port au Prince, Haiti.

The British steamer *Iberian* is sunk by a German submarine off Queenstown after a refusal to stop for search; six of the crew are killed by shell fire, three of them Americans.

Charles Becker, the New York police lieutenant, is executed at Sing Sing for the murder of Herman Rosenthal on July 16, 1912.

31.—Great Britain addresses a note to the United States in response to the American *caveat* on British prize procedure.

AUGUST

2.—Two British notes and a German note on the *William P. Frye* case are published in the United States.

3.—Twenty-seven persons are drowned and much property damaged in a flood at Erie, Pa.

4.—American marines are landed from the battleship *Connecticut* at Port au Prince, Haiti, and take possession of the fort dominating the town; another force is landed at Cape Haitien.

5.—A conference of representatives of the United States, Brazil, Argentina, Chile, Bolivia, Uruguay and Guatemala on the Mexican situation is held at Washington.

6.—American marines take forcible possession of the National Palace, the Haitian gunboat *Pacifique*, and the office of the port of Port au Prince, Haiti.

7.—Solon Menos, Minister from Haiti, asks the State Department for assurances that the integrity and independence of Haiti will not be impaired by the American occupation.

10.—The United States replies to the latest German note on the sinking of the *William P. Frye*, accepting the proposal of a joint board for fixing damages.

11.—General Carranza protests to the United States and the coöperating Latin-American states against foreign interference in Mexican affairs.

A shipment of $52,000,000 in gold and securities from England arrives at New York.

12.—The United States replies to the Austrian note of June 29 protesting against export of munitions to the Allies.

The Interstate Commerce Commission hands down a decision reducing the freight rates on anthracite coal between the producing district and tidewater.

13.—A joint appeal of the United States and six Latin-American countries for the restoration of peace in Mexico is dispatched to the leaders of the Mexican factions.

16.—The French prize court hands down a decision confiscating the steamer *Dacia*.

Armed Mexicans cross the Rio Grande and attack a cavalry patrol, killing one American soldier.

Leo M. Frank is taken by a mob from the Georgia State Prison Farm at Milledgeville and lynched the following morning near Marietta.

A storm isolates Galveston and causes much loss of property and nearly 200 lives on the Texas coast.

17.—The Missouri Pacific and St. Louis, Iron Mountain & Southern railroads are placed in the hands of receivers.

19.—The White Star liner *Arabic*, out of Liverpool for New York, is sunk without warning by a German submarine off Fastnet; two American passengers are among the 44 persons lost.

Floods cause much damage to property at St. Louis.

22.—The Commission on Industrial Relations submits a divided report and goes out of existence.

24.—Count von Bernstorff, the German Ambassador, transmits to the State Department a request for delay in action on the sinking of the *Arabic*, pending a hearing of the German version.

The U. S. District Court at Buffalo hands down a decision declaring the Eastman Kodak Co. an illegal combination in restraint of trade.

The eighth annual Conference of Governors opens at Boston.

27.—Count von Bernstorff assures Secretary Lansing that Germany will give full satisfaction for the sinking of the *Arabic*.

28.—Frank L. Polk, Corporation Counsel of New York, is appointed Counselor for the Department of State.

29.—The submarine *F-4* is refloated in Honolulu harbor.

A shipment of $55,000,000 in gold and securities from England arrives at New York.

Explosions occur in the works of the du Pont Powder Co. at Wilmington, Del., and the American Powder Co. at Acton, Mass.

30.—Sir Cecil Spring-Rice, the British Ambassador, informs the State Department that German and Austrian goods purchased by American importers prior to March 1 will be released.

James F. J. Archibald, an American newspaper correspondent, is detained at Falmouth, England, and relieved of papers implicating members of the Austrian and German embassies in plots to hamper American industry.

31.—Gen. Pascual Orozco, Mexican revolutionist, is killed by an American posse in Culberson Co., Texas.

SEPTEMBER

2.—Cardinal Gibbons transmits to President Wilson a message from Pope Benedict XV in the interest of peace.

3.—Rear-Adm. Wm. B. Caperton issues a proclamation of martial law in Port au Prince, Haiti.

4.—Henry Ford of Detroit announces the establishment of a fund of $1,000,000 to support a campaign for peace and against preparedness.

5.—Dr. Dumba, Austro-Hungarian Ambassador, admits authorship of a letter seized from James F. J. Archibald in England seeking authorization from his Government to pursue certain methods to hamper the manufacture of munitions for the Allies.

7.—Germany presents to the United States a note on the sinking of the *Arabic*, pleading that the submarine commander acted in self-defense and denying obligation to grant indemnity.

A shipment of $30,000,000 in gold and securities reaches New York from England.

8.—Gustav Stahl, a German reservist, who swore to having seen guns mounted on the *Lusitania* pleads guilty to perjury.

Henry Ford announces an increase of his peace fund from $1,000,000 to $10,000,000.

9.—The United States requests the recall of Dr. Dumba, the Austro-Hungarian Ambassador.

Germany addresses to the United States a note in explanation of the attack on the *Orduna*.

10.—The New York State Constitutional Convention adopts the final draft of the revised constitution and adjourns.

A commission empowered to negotiate a loan for the Allies reaches New York.

12.—Secretary of the Navy Daniels announces the personnel of the Naval Advisory Board.

13.—Two American soldiers are killed in an attack by Mexicans on a cavalry patrol near Santa Maria, Tex.

14.—Germany presents to the United States a note on the sinking of the *Hesperian*, alleging that it could not have been caused by a submarine attack.

16.—A treaty establishing a financial protectorate for a period of 10 years is signed at Port au Prince between the United States and Haiti; the United States recognizes the new President of Haiti.

The British Prize Court condemns four cargoes of American meat products seized in November, 1914.

17.—Dr. Dumba addresses to Secretary Lansing a letter of protest against the demand for his recall.

Advices are received at Nome, Alaska, from Vilhjamur Stefansson, of the Canadian Arctic Expedition, who was believed to have been lost.

18.—A Pan-American conference on the Mexican situation agrees to recommend prompt recognition of the strongest *de facto* government in Mexico.

The Panama Canal is closed to navigation by a slide in Culebra Cut.

19.—Germany replies to the U. S. note of Aug. 10 on the sinking of the *William P. Frye*, promising to destroy no more American vessels carrying conditional contraband.

22.—Seven persons are killed and 85 injured in the collapse of the street over the subway excavation in Seventh Avenue, New York.

23.—The State Department declines to arrange a safe conduct for Dr. Dumba until his Government takes action on the request for his recall.

24.—A large force of Mexicans make an organized raid on the village of Progreso, Tex., killing one American soldier.

25.—One person is killed and two injured in the collapse of the street above the subway excavation in Broadway, New York.

26.—One American marine is killed and ten wounded in engagements with Haitian rebels near Cape Haitien.

27.—An American marine is killed by Haitian rebels near Port au Prince.

The Missouri, Kansas & Texas Railway is placed in the hands of receivers.

Forty-four persons are killed by the explosion of a gasoline tank car at Ardmore, Okla.

28.—Dr. Dumba informs the State Department that he has been recalled and asks for a safe conduct.

The Anglo-French financial commission announce the terms of a $500,000,000 credit loan arranged with American bankers.

29.—Wireless telephone communication is established between Arlington, Va., and Mare Island, Cal., a distance of 2,500 miles; a message is heard also at Pearl Harbor, Hawaii, 4,600 miles distant.

The Grand Army of the Republic parades in Washington on the fiftieth anniversary of the parade at the close of the Civil War.

OCTOBER

1.—The State Department publishes a British note denying discrimination between British and American exporters to neutral European countries in the enforcement of the British blockade.

4.—The State Department instructs Ambassador Morgenthau to inform the Turkish Government that atrocities inflicted on the Armenians had aroused strong sentiment in the United States.

5.—Count von Bernstorff, the German Ambassador, delivers a memorandum to Secretary Lansing disavowing the sinking of the *Arabic* and offering reparation for the American lives lost.

Dr. Dumba sails from New York for Rotterdam.

6.—President Wilson declares himself in favor of adequate preparations for national defense, in an address to the Advisory Board of the Navy.

President Wilson issues a statement of his intention to vote for woman suffrage in New Jersey, and announces his engagement to Mrs. Norman Galt of Washington.

9.—A conference of representatives of the United States and Argentina, Brazil, Chile, Bolivia, Uruguay and Guatemala decides on the recognition of General Carranza as Provisional President of Mexico.

11.—The State Department receives a memorandum from the British Foreign Office explaining the condemnation of

shipments of American packers by the British prize court.

12.—The United States dispatches to Germany a reply to the latest note on the case of the *William P. Frye*, dealing with provision for the safety of crews of American ships sunk as carriers of contraband.

Speech is transmitted by wireless from Arlington, Va., to Paris.

13.—The U. S. District Court at New York declares unconstitutional the act of Congress of Aug. 18, 1914, taxing dealings in cotton futures.

The Government's criminal prosecution of 12 directors of the New York, New Haven & Hartford Railway Co. for conspiracy in restraint of trade begins at New York.

14.—Six German officers and six seamen are reported to have escaped on Oct. 9 on a small sailing yacht from the German cruiser *Kronprinz Wilhelm* interned at Newport News.

15.—The Navy Department orders the court-martial of Rear-Adm. Wm. N. Little on charges of carelessness in the inspection of the submarine *K-2*.

The contracts for the $500,000,000 Anglo-French loan are signed at New York.

17.—Count von Bernstorff announces that he has transmitted to the Department of State affidavits of four muleteers on board the steamer *Nicosian*, charging that on Aug. 19 the British patrol *Baralong* misused the American flag and sank a German submarine, attacking the *Nicosian* with the deliberate murder of its crew; Captain Manning of the *Nicosian* denies the truth of the affidavits.

18.—Mexican bandits wreck and loot a passenger train on the St. Louis, Brownsville & Mexico Railroad near Brownsville, Tex., killing three passengers, one of them an American soldier.

19.—President Wilson proclaims an embargo on the exportation of arms and ammunition to Mexico and issues a supplementary order making an exception in favor of the Carranza Government.

Secretary Daniels announces a five-year programme for the increase of the Navy.

A constitutional amendment extending the suffrage to women is defeated in a special election in New Jersey.

A shipment of $23,000,000 in gold coin reaches New York from London.

21.—Mexican bandits kill three American soldiers and wound eight in a fight at Ojo de Agua, Tex.

23.—The United States addresses to the British Government an elaborate note of protest on the British blockade, which is declared to be illegal and ineffective.

24.—Robert Fay, a lieutenant in the German Army, and Walter Scholz are arrested near Weehawken, N. J., charged with conspiracy to destroy at sea by time bombs merchant ships leaving New York for England and France.

25.—Robert Fay confesses his plans to destroy ships carrying munitions to the Allies and admits his connection with the German secret service.

The appointment of Dr. V. K. Wellington Koo as Chinese Minister to the United States is announced at Peking.

Fourteen persons are killed in a fire in a box factory in Pittsburgh.

27.—Max Breitung, cousin of E. N. Breitung, purchaser of the *Dacia*, is arrested charged with complicity in the German bomb conspiracy.

28.—Sir Edward Grey declares in the British House of Commons that the United States has the right to demand the submission to an international tribunal of the verdicts of the British prize court.

Twenty-one children are killed in a fire in a school building at Peabody, Mass.

30.—The State Department announces that the naval experts who examined the metal fragment alleged to have been picked up on the deck of the *Hesperian* declare it to be part of a torpedo.

31.—The Dutch steamer *Hamborn* and the American steamer *Hocking* are brought into Halifax by prize crews from a British cruiser.

NOVEMBER

1.—The U. S. Supreme Court declares unconstitutional the Arizona alien-labor law.

2. Elections are held in several states; a revised constitution is defeated in New York; woman suffrage is defeated in New York, Pennsylvania and Massachusetts, and prohibition in Ohio. Kentucky, Maryland and Mississippi elect Democratic governors, and Massachusetts a Republican. The following Representatives are elected to Congress: Wm. S. Bennet (Rep.), Bertrand F. Snell (Rep.), and Norman J. Gould (Rep.) from New York; Samuel J. Nichols (Dem.) from South Carolina; and Henry W. Temple (Rep.) from Pennsylvania.

4.—President Wilson announces his defense policy in a speech before the Manhattan Club of New York.

The Seamen's Act goes into effect.

5.—Secretary Garrison announces a plan for the increase of the military strength of the country.

Gen. Clinton L. Riggs announces his resignation as Secretary of the Interior in the Philippines Commission.

6.—Twelve persons are killed in a fire in a garment factory in Brooklyn.

7.—The Italian steamer *Ancona*, out of Naples for New York with 412 passengers, is sunk in the Mediterranean by a submarine flying the Austrian flag; over 200 lives are lost, including several Americans.

8.—A Federal grand jury at New York finds indictments against Robert Fay and five accomplices for conspiracy to destroy vessels at sea.

10.—The main ordnance shop of the Bethlehem Steel Co. at Bethlehem, Pa., is destroyed by fire with very heavy loss.

11.—Fire destroys the wire-rope shop of the John A. Roebling Sons Co. at Trenton, N. J.

12.—The Nobel Prize for physics is awarded to Thomas A. Edison and Nikola Tesla; the 1914 prize for chemistry

is awarded to Prof. Theodore W. Richards of Harvard University.

16.—Secretary of State Lansing instructs Ambassador Penfield at Vienna to request full information of the sinking of the *Ancona*.

17.—The State Department receives an official Austrian statement on the sinking of the *Ancona*.

18.—Justice Charles E. Hughes of the U. S. Supreme Court, nominated for the Presidency by petition in Nebraska, declines the nomination and requests the removal of his name from the primary ballot.

21.—The Department of Justice issues an appeal to state authorities to assist in bringing to justice conspirators on behalf of Germany and Austria against American industries.

22.—The trial of Karl Buenz and other officials of the Hamburg-American Line on charges of conspiracy to dispatch supply ships to German cruisers begins in New York.

Secretary of the Navy Daniels disapproves the findings of the court martial which acquitted Adm. Wm. N. Little of charges of negligence in the inspection of the submarine *K-2*.

26.—One American soldier and several Mexican soldiers are killed in a skirmish on the border at Nogales, Ariz.

29.—The Democratic Senators and the Democratic members of the House Committee on Ways and Means meet in caucus in Washington.

30.—Secretary of State Lansing informs the German Ambassador that Capt. Karl Boy-Ed and Capt. Franz von Papen, German naval and military attachés at Washington, are no longer acceptable to the United States Government and requests their recall.

Thirty-one workmen are killed and several injured in an explosion in the Hagley Yard plant of the du Pont Powder Co. near Wilmington, Del.

DECEMBER

2.—The State Department is informed that the British Government has requisitioned the American steamers *Hocking* at Halifax and *Genesee* at St. Lucia without the formality of prize-court proceedings.

Karl Buenz, director of the Hamburg-American Line in the United States, the company, and three other employees are convicted by a jury in New York on two charges of conspiracy to defraud the United States.

3.—Secretary of State Lansing announces that the United States has requested the recall of Capt. Karl Boy-Ed and Capt. Franz von Papen.

The Senate Democratic caucus choses Senator James P. Clarke (Ark.) as President *pro tempore* of the Senate.

4.—Karl Buenz and his co-conspirators are sentenced to terms in the Atlanta penitentiary.

The Democratic caucus fails to agree on a rule for the closure of debate in the Senate.

Henry Ford and his party of peace advocates sail from New York for Copenhagen for the purpose of stopping the European War.

The Panama-Pacific Exposition at San Francisco is closed.

6.—The first session of the Sixty-fourth Congress is opened; Champ Clark is reëlected Speaker of the House and Senator Clarke President *pro tempore* of the Senate.

The United States addresses a note to Austria-Hungary demanding disavowal and reparation for the sinking of the Italian liner *Ancona*.

The United States protests to Great Britain against the requisitioning of vessels of the American Transatlantic Co. without the formality of prize-court procedure.

Secretary Lansing refuses to give the German Ambassador a detailed explanation of the grounds for requesting the recall of Boy-Ed and von Papen.

Robert Fay and his five accomplices are reindicted by a Federal grand jury at New York on five counts of conspiracy to destroy life and property.

Governor Whitman of New York removes from office Edward E. McCall, chairman of the Public Service Commission of New York City.

7.—President Wilson reads his annual message in joint session of the two houses of Congress.

The Democratic National Committee, in session at Washington, agrees to call the national convention of the party at St. Louis on June 14, 1916.

9.—The British Embassy announced that the American steamers *Hocking* and *Genesee* will not be requisitioned without action of the prize court.

Governor Whitman of New York announces the appointment of Oscar S. Straus to be chairman of the Public Service Commission of New York City.

Fire destroys the town of Hopewell, near Richmond, Va., the site of an immense new explosives factory of the du Pont Powder Co.

10.—Count von Bernstorff announces to the State Department the recall of Boy-Ed and von Papen; the German censorship permits the fact of the American demand to appear in the German press.

11.—The Interstate Commerce Commission authorizes increases in passenger rates in certain western territory.

12.—The German Ambassador announces instructions to disavow on behalf of his Government acts of Count Franz von Rintelen in violation of laws of the United States.

13.—The British Ambassador addresses a note to the United States dealing with the condition of American trade under the British blockade.

The Senate confirms the appointment of Robert Lansing as Secretary of State.

14.—The United States dispatches to France a note of protest on the seizure of German and Austrian subjects on American ships by boarding parties from the French cruiser *Descartes* off Porto Rico.

Representative Frank Buchanan of Illinois, former president of Labor's National Peace Council, demands the impeachment of H. Snowden Marshall, U.

S. district attorney at New York, in charge of an investigation of the activities of the Council.

The Republican National Committee, in session at Washington, decides to call the national party convention at Chicago on June 7, 1916.

15.—Austria-Hungary returns an unsatisfactory reply to the American demand for disavowal of the sinking of the *Ancona*.

President Wilson signs an executive order requiring that all persons leaving the United States for foreign ports must be provided with passports.

17.—President Wilson signs a resolution extending the War Revenue Act for one year.

The Senate confirms the nomination of Frank L. Polk as Counsellor for the State Department.

President Wilson nominates Henry Prather Fletcher, now Ambassador to Chile, as Ambassador to Mexico.

Both houses of Congress adjourn to Jan. 4, 1916.

Paul Koenig, of the Hamburg-American Line, R. E. Leyendecker and Fred Metzler are arrested in New York, charged with conspiracy to destroy the Welland Canal.

18.—President Wilson and Mrs. Edith Bolling Galt are married in Washington.

19.—The United States addresses a second note to Austria-Hungary reiterating the demand for disavowal and reparation for the sinking of the *Ancona*.

20.—The Panama Canal is opened temporarily for the passage of a few small vessels.

22.—Henry Ford leaves his peace party at Christiania and returns to the United States.

23.—A Federal grand jury at New York indicts Paul Koenig and two accomplices for conspiracy to destroy the Welland Canal.

27.—The second Pan-American Scientific Congress is opened at Washington; Secretary Lansing makes an important speech on the Pan-American policy of the United States.

28.—A Federal grand jury at New York indicts on charges of conspiracy against American industries Capt. Franz Rintelen of the German Army, Representative Frank Buchanan of Illinois, H. Robert Fowler, general counsel, and five other officers and agents of Labor's National Peace Council.

Col. Edward M. House sails from New York as representative of President Wilson on a mission to promote a better understanding between the United States and the warring nations.

Thomas Mott Osborne, warden of Sing Sing Prison, is indicted by a grand jury at White Plains, N. Y., on charges of perjury and mismanagement.

29.—The Austro-Hungarian Government replies to the second American note on the *Ancona*, announcing the punishment of the submarine commander and offering reparation for the loss of American lives.

30.—The British liner *Persia* is sunk in the Mediterranean off Crete with a loss of about 300 lives, among them the American consul at Aden.

31.—Thomas Mott Osborne is granted leave of absence as warden of Sing Sing Prison and George W. Kirchwey is appointed to fill the vacancy.

FOREIGN CHRONOLOGY[1]

JANUARY

3.—Baron Wimborne is appointed Lord Lieutenant of Ireland, succeeding the Earl of Aberdeen, resigned.

The London Stock Exchange is reopened.

5.—A Constitutionalist army under General Obregon captures Puebla, Mexico, from the Villistas.

6.—The rejection by Panama of the arbitral award of Chief Justice White of the U. S. Supreme Court in the boundary dispute with Costa Rica is announced at Washington.

President Poincaré of France signs a decree making permanent the prohibition of the sale of absinthe and similar liquors.

11.—The British oil properties at Tampico, Mexico, are closed down by order of General Carranza.

Turkey agrees to Italy's demands for reparation for the violation by Turkish soldiers of the Italian consulate at Hodeida.

12.—The Mexican National Convention at Mexico City appoints Eulalio Gutierrez Provisional President, to serve until April 1, 1916.

13.—Count Leopold von Berchtold, Foreign Minister of Austria-Hungary, resigns, and is succeeded by Baron Stephan Burian von Rajecz.

Don Carlos Melendez is elected President of Salvador.

A disastrous earthquake occurs in central Italy, destroying Avezzano and injuring many other towns with thousands of casualties.

16.—Gen. Roque Gonzales Garza is elected Provisional President of Mexico by the convention in session at Mexico City; Gen. Eulalio Gutierrez and a part of his Cabinet flee from the capital.

General Carranza raises the embargo on shipments of oil from British wells in the Tampico field.

18.—The British Government prohibits issues of capital for undertakings outside the Empire and establishes regulations for internal issues.

20.—Gen. Eulalio Gutierrez, deposed Provisional President of Mexico, surrenders his forces to General Carranza at Vera Cruz.

21.—The resignation of Lieut.-Gen. von Falkenhayn, Chief of the German General Staff, as Minister of War, and the appointment of Major-Gen. Wild von Hohenborn, are announced at Berlin.

23.—The forces of Gen. Emiliano Zapata capture Puebla, Mexico, from the Carranzistas.

[1] Exclusive of the chronology of the European War, which is separately recorded in the following section.

24.—The South African rebels under Colonel Maritz are repulsed in an attack on Upington, Bechuanaland.

25.—Japan presents to the Chinese Government a series of demands for commercial and political concessions.

Premier Coutinho of Portugal and his Cabinet resign; Gen. Pimenta Castro is appointed Premier.

26.—The German Government issues a decree sequestrating all stocks of corn, wheat and flour.

27.—General Garza, Provisional President of Mexico, and his Government evacuate Mexico City with the Villista army.

28.—General Obregon of the Carranzistas enters Mexico City.

29.—The Peruvian Cabinet resigns.

30.—Lu Cheng-Hsiang is appointed Chinese Minister of Foreign Affairs.

FEBRUARY

1.—The German Government puts into effect a decree for the seizure of supplies of copper, aluminium, and other metals.

3.—General Villa assumes executive power in northern Mexico and appoints a cabinet of three, with headquarters at Aguascalientes.

6.—The German Government rescinds its order restricting the sale of imported food stuffs to municipalities or to the grain monopoly and assures the United States that they will not be taken for army or government use.

7.—The Turkish officials at Hodeida return the British Consul, G. A. Richardson, to the Italian Consulate and salute the Italian flag.

Von Kober becomes Minister of Finance of Austria-Hungary, succeeding von Bilinski, resigned.

8.—The British Government announces a plan for the development of the dye industry in Great Britain with government aid.

The Carranzist forces are severely defeated at Monterey, Mexico.

9.—Japan communicates a memorandum of her demands on China to the United States, Great Britain, Russia and France.

The Russian Duma is opened after a recess of six months.

10.—The British House of Commons passes army estimates for 3,000,000 men and unlimited credit for their support.

The Chinese Government pardons Sun Yat-sen and other rebel leaders.

11.—General Carranza orders the Spanish Minister, José Caro, to leave Mexico within 24 hours because of his refusal to surrender a Spanish subject who had sought refuge in the legation.

The Japanese Minister at Pekin breaks off negotiations in dissatisfaction with the attitude of the Chinese Government on the Japanese demands.

The Canadian Government proclaims a drastic schedule of war taxes.

12.—The Chinese Government delivers a note in reply to the Japanese demands.

The French Chamber of Deputies adopts a bill prohibiting the sale of absinthe.

The protocol of the Opium Convention of 1912 is signed at The Hague by representatives of the United States, Holland and China.

14.—The German Government orders the sequestration of all stocks of oats in the country.

The Peruvian Cabinet resigns.

18.—China communicates a memorandum of the Japanese demands to the United States, Great Britain, Russia and France.

A small revolt among Hindu soldiers at Singapore is suppressed by French and Japanese marines.

23.—Davilmar Theodor, President of Haiti, abandons his office and takes refuge from revolutionists on board a Dutch steamer at Port au Prince.

24.—The Austro-Hungarian Government takes over all stocks of cereals in the country.

25.—The revolutionists in Haiti recognize Gen. Vilbrun Guillaume as President.

MARCH

1.—The British House of Commons unanimously appropriates $1,435,000,000 for war purposes.

Feliciano Viera is elected President of Uruguay.

3.—China agrees to an extension for 99 years of the existing leases of the ports of Dalny and Port Arthur to Japan.

5.—Gen. Vilbrun Guillaume is elected President of Haiti.

6.—Premier Venizelos of Greece and his Cabinet resign.

Portuguese revolutionists proclaim the Republic of Northern Portugal, with Gen. Antonio Barreto as president.

9.—The British House of Commons passes a bill empowering the Government to take over and control all works capable of manufacturing munitions of war.

M. Gounaris, Premier of Greece, completes a Cabinet; the Chamber of Deputies is prorogued for a month.

Mexico City is evacuated by the Carranzist forces under General Obregon and Zapatist troops take possession.

13.—Great Britain and Russia warn Japan against pressing demands on China additional to those contained in her original communication to the powers.

General Carranza abandons the blockade of the Mexican port of Progreso under pressure from the United States.

21.—The French Government issues a decree extending the moratorium as applied to *rentes* to July 15.

King Victor of Italy signs a decree promulgating a new national-defense law.

23.—China accepts four of Japan's demands relating to the control of foreign concessions in southern Manchuria.

24.—A general election to the Japanese House of Representatives results in the return of the Okuma Government.

The Canadian Parliament votes an appropriation of $100,000,000 for war purposes.

30.—The French Senate passes a bill authorizing advances of $270,000,000 to Serbia, Montenegro, Belgium and Greece.

APRIL

7.—The Russian Government promulgates a law giving local self-government to all towns in Poland.

15.—Carranzista forces under General Obregon defeat General Villa with heavy loss near Celaya, Mexico.

23.—The German Federal Council extends to July 31 the operation of the order depriving foreigners of the right to sue in German courts for claims accrued before July 31, 1914.

The Danish Diet adopts an amendment to the Constitution extending the suffrage to women.

26.—Negotiations with the Chinese Government are resumed by the Japanese Minister at Peking.

27.—The International Women's Peace Congress opens at The Hague.

29.—David Lloyd George announces in the British House of Commons the Government's plan for the regulation and restriction of liquor selling.

30.—A large section of Colon, Panama, is destroyed by fire, with a loss of 11 lives and property damage of over $3,500,000.

MAY

1.—China presents a reply to the Japanese demands which rejects the clauses impairing China's sovereignty.

The Greek Parliament is dissolved.

3.—Juan Vicente Gomez is elected President of Venezuela by the National Congress.

4.—Italy denounces the Triple Alliance, resuming complete freedom of action.

David Lloyd George, Chancellor of the Exchequer, submits his annual budget in the British House of Commons.

6.—The Japanese Government issues a decree of martial law on the Kwang-Tung Peninsula and the South Manchuria railroad.

7.—Japan presents an ultimatum to China, reserving for future consideration the demands most subversive of China's sovereignty.

The British Government announces its intention of prohibiting the sale of cheap raw spirits.

8.—China accedes to the demands of Japan as modified in the final ultimatum.

13.—Premier Salandra of Italy and his Cabinet resign because of the lack of support of its foreign policy.

President Asquith announces in the British House of Commons the Government's intention to intern all alien enemies in the United Kingdom.

14.—King Victor of Italy accepts the resignation of the Salandra Ministry but fails to secure a new Premier.

A revolution originating in the Portuguese navy breaks out at Lisbon.

15.—Baron Salandra consents to form a new Italian Ministry.

18.—A new Portuguese Cabinet is formed from the successful revolutionist party under the Premiership of João Chagas.

22.—Three trains collide on the Caledonian Railway at Gretna Green, Scotland, with a loss of nearly 200 lives.

23.—Italy declares war on Austria-Hungary.

25.—A national coalition Cabinet is formed in Great Britain, with David Lloyd-George as Minister of Munitions.

A general treaty of peace and arbitration between Argentina, Brazil and Chile is concluded at Buenos Aires.

João Chagas, revolutionary Premier of Portugal, resigns.

Two treaties covering Japanese rights in Shantung and Manchuria are concluded between China and Japan at Peking.

29.—Theophile Braga is elected President of Portugal pending a general election, succeeding Manuel de Arriaga, resigned.

JUNE

1.—The Japanese Diet approves a new military programme increasing the standing army by 24,000 men.

5.—The new Danish Constitution embodying woman suffrage, is passed by the Diet and approved by the King.

6.—The ratification of a treaty between Russia and Sweden is announced at Stockholm.

The Carranzist forces under Gen. Obregon win a decisive victory over Generals Villa and Angeles after five days' fighting at Leon, Mexico.

7.—A treaty providing for the autonomy of Mongolia under the suzerainty of China is signed by representatives of Russia, China and Mongolia at Kiakhta, Siberia.

9.—The Mexican Convention in session at Mexico City deposes Roque Gonzales Garza and elects Francisco Lagos Chazaro Provisional President.

11.—General Carranza issues a proclamation inviting the Mexican factions to affiliate with a new government which he proposes to establish at Mexico City.

13.—A general election in Greece results in the return of the party of former Premier Venizelos.

15.—The British House of Commons votes a war credit of £250,000,000.

18.—Four members of General Carranza's Cabinet resign; his generals, Obregon and Gonzales, support the resigning ministers.

19.—Atose Castro, Premier of Portugal, completes a new Cabinet.

The King of Denmark signs a bill granting the suffrage to the women of Iceland.

21.—The British House of Commons passes unanimously on first reading a resolution authorizing the Government to issue a war loan to the amount of £1,000,000,000.

Gen. Christian De Wett, one of the leaders of the rebellion in South Africa, is convicted of treason at Bloemfontein; he is sentenced the following day to six years' imprisonment and to pay a fine of $10,000.

22.—Premier Dato of Spain and his Cabinet resign.

23.—The Munitions bill is introduced in the British House of Commons and passed on first reading; David Lloyd George announces that British labor is given seven days in which voluntarily to man the factories to the required force.

24.—King Alfonso of Spain requests the Dato Ministry to resume office.

25.—The French Chamber of Deputies passes a bill appropriating $1,200,000,000 for war expenses for the three months beginning July 1.

Javier Figueroa, the Liberal candidate, is elected President of Chile.

26.—*Vorwaerts*, the Berlin Socialist daily, publishes an appeal for peace and is suspended by the German Government.

Gen. Barend Wessels and two other South African rebels are convicted of treason and sentenced to prison terms.

Gen. W. A. Soukhomlinoff, Russian Minister of War, resigns, and is succeeded by General Polivanoff.

29.—The French Senate passes the war appropriations bill for the third quarter of the year.

JULY

2.—The British House of Commons passes the Munitions bill.

7.—Eleven persons are killed and many injured in a wreck on the Niagara gorge railroad at Queenston, Ont.

10.—The Carranzist forces under Gen. Pablo Gonzales capture Mexico City.

12.—The voluntary registration of munitions operatives in Great Britain closes with a total enrolment of 90,000.

13.—Floods in the Chinese provinces of Kwang-tung, Kwang-si and Kiang-si cause immense damage and loss of life.

14.—A proclamation is issued in Great Britain putting a labor dispute in the South Wales coal field under the Munitions Act.

15.—A strike involving 200,000 miners is begun on the South Wales coal fields, in defiance of advice of labor leaders and the royal proclamation.

17.—Christakis Zographos, Foreign Minister of Greece, resigns.

19.—Eleutherios Venizelos resumes leadership of the Liberal party in the Greek Chamber of Deputies.

21.—The striking coal miners in South Wales accept terms arranged by David Lloyd-George.

22.—A convention between Turkey and Bulgaria ceding to the latter the Turkish portion of the Dedeaghatch Railway is signed at Constantinople.

24.—The German Government issues an order regulating the prices of grain and other foodstuffs.

27.—A revolution breaks out in Port au Prince, Haiti, after the execution of 160 political prisoners by the Government of President Guillaume.

28.—The revolutionists in Port-au-Prince, Haiti, remove the President from the French Legation and murder him; American marines are landed to restore order.

Pope Benedict XV addresses an appeal for peace to the heads of the belligerent nations.

29.—Viscount Kanetake Oura, Japanese Minister of the Interior, resigns under charges of bribery.

30.—Premier Okuma of Japan and his Cabinet resign.

AUGUST

1.—The Russian Duma votes unanimously to prosecute the war until Russia is victorious.

4.—A coalition Ministry is formed in New Zealand.

6.—A general election in Manitoba results in an overwhelming defeat of the Conservatives after 15 years of office.

7.—Bernardino Machado, former Premier, is elected President of Portugal.

8.—Premier Count Okuma of Japan withdraws his resignation and reorganizes his Cabinet.

The capture of Lieut.-Col. S. G. Maritz, the South African rebel, at Angola, Portuguese West Africa, is reported from Pretoria.

12.—General Dartiguenave is elected President of Haiti by the National Assembly.

The German Federal Council passes a bill for a new war credit of $2,500,000,000.

Baron Kikujiro Ishii enters the Japanese Cabinet as Foreign Minister.

14.—An appeal to the leaders of the Mexican factions, signed by the United States, Brazil, Argentina, Chile, Bolivia, Uruguay and Guatemala, is published at Washington; the coöperating Governments propose a pacification conference and offer their disinterested help.

15.—A national registration of all persons between the ages of 15 and 65 is made in the United Kingdom.

16.—The Greek Parliament assembles; the Gounaris Ministry is defeated in a test vote in the Chamber of Deputies and resigns.

17.—King Constantine of Greece accepts the resignation of the Gounaris Ministry and invites Eleutherios Venizelos to form a Cabinet.

18.—José Pardo is inaugurated President of Peru.

19.—General Villa formally accepts the good offices of the United States and coöperating Governments for the pacification of Mexico.

22.—Eleutherios Venizelos accepts the Premiership of Greece.

31.—A strike in the South Wales coal field is averted by an agreement bringing the surface workers under the terms of the former award.

SEPTEMBER

2.—Li Yuan-heng, Vice-President of the Chinese Republic, resigns.

4.—The Carranzists under General Obregon capture Saltillo, Mexico.

7.—The British Trade Union Congress adopts unanimously a resolution condemning conscription.

8.—The transfer of the control of the Russian Duma to a Liberal-Progressive majority is announced at Petrograd.

David Lloyd-George appeals to the British Trades Union Congress to suspend union restriction in munitions factories.

10.—General Carranza rejects the plan of the United States and coöperat-

ing Latin-American states for the pacification of Mexico.

16.—A treaty between the United States and Haiti, establishing American supervision over Haitian finances, is signed at Port-au-Prince.

The Russian Duma is prorogued for two months.

21.—Reginald McKenna, Chancellor of the Exchequer, submits his budget to the British House of Commons, with proposals for greatly increased taxation.

22.—Turkey ratifies the treaty with Bulgaria for the cession of the Dedeaghatch Railway.

25.—A protocol providing for the transfer of the ceded Turkish territory to Bulgaria on Oct. 6 is signed at Demotika, Turkey.

The French Senate passes a war credit of $1,248,000,000 for the last three months of the year.

29.—The Carranzist forces under General Obregon capture Torreon, Mexico.

30.—The Greek Parliament reassembles; the House approves mobilization of the land and naval forces; Premier Venizelos declares his policy towards Serbia.

OCTOBER

5.—The Greek Chamber of Deputies passes a vote of confidence in the Venizelos Government after a debate on the landing of Allied troops at Saloniki; King Constantine informs Premier Venizelos that he is unable to support his policy and the Ministry resigns.

6.—King Constantine of Greece requests former Premier Zaimis to form a coalition Cabinet.

7.—Alexander Zaimis accepts the Premiership of Greece and completes a Cabinet.

10.—The Russian Minister of the Interior and the Procurator-General of the Holy Synod resign; Alexsi Khvostoff, leader of the Liberals in the Duma, becomes Minister of the Interior.

11.—Premier Zaimis of Greece announces in the Chamber a policy of armed neutrality; M. Venizelos promises the Government qualified support.

The British House of Commons votes an additional war credit of £400,000,000.

12.—The British House of Commons confirms the action of the Government in placing the Anglo-French loan in the United States.

Alexander Volzsin becomes Procurator-General of the Holy Synod in the Russian Ministry.

The Carranzists capture the port of Guaymas, on the west coast of Mexico.

13.—Théophile Delcassé, French Minister of Foreign Affairs, resigns; Premier Viviani assumes the portfolio and the Ministry receives a vote of confidence in the Chamber.

18.—The resignation of Sir Edward Carson from the British Cabinet is announced.

19.—The United States, Argentine, Brazil, Chile, Bolivia, Uruguay, Guatemala, Colombia and Nicaragua formally recognize Venustiano Carranza as Chief Executive of Mexico.

21.—A general election in South Africa results in the return of Premier Botha and a large majority of Unionists.

The German Government issues a decree prohibiting German subjects from disposing of their interests in merchant vessels to aliens.

23.—The German Federal Council decides to take over from the state authorities control of the price and supply of foodstuffs.

28.—René Viviani, Premier of France, and his Cabinet resign; Aristide Briand accepts the Premiership.

Japan advises China to postpone the contemplated change to a monarchical form of government.

NOVEMBER

1.—The Chinese Government rejects the proposals of Japan, Great Britain and Russia for a postponement of the decision on the return to a monarchical form of government.

3.—Premier Briand declares his war policy in the French Chamber of Deputies and receives a vote of confidence.

4.—The Zaimis Ministry, after a rupture with M. Venizelos, is defeated in the Greek Chamber of Deputies and resigns.

6.—Stephanos Skouloudis is appointed Premier of Greece and retains in his Cabinet most of the members of the Zaimis Ministry.

The British Government seizes and suppresses the London *Globe*.

The Cunard Steamship Co. refuses passage to 900 Irishmen desiring to sail from Liverpool for America.

9.—The British Government issues a regulation requiring British subjects of military age contemplating emigration to apply for passports.

10.—Yoshihito is crowned Mikado of Japan at Kioto.

The retirement of S. V. Bukhloff, Russian Minister of Communications, is announced at Petrograd.

11.—The Greek Chamber of Deputies is dissolved and elections set for Dec. 19.

12.—The Haitian Senate ratifies the protectorate treaty with the United States.

The resignation of Winston Churchill, former First Lord of the Admiralty, from the British Cabinet to enter active service is announced in London.

15.—The New Zealand Government prohibits emigration of men of military age without military permits.

20.—The French Government issues a decree prohibiting sales of French merchant vessels during the period of the war.

25.—A French "victory loan" is opened to subscription.

27.—The Canadian Government commandeers 20,000,000 bus. of wheat in eastern elevators for the use of the British Government.

29.—New temperance regulations further restricting the hours of liquor selling go into effect in England.

DECEMBER

1.—The resignation of the Austrian Ministers of Finance, Commerce, and Interior is announced.

3.—The Norwegian State Council issues a decree prohibiting the sale of Norwegian ships to foreigners.

5.—A band of rebels board the Chinese cruiser *Chao-ho* in Shanghai harbor and open fire on two other warships and the arsenal; they abandon the ship the following day.

6.—Premier Dato of Spain and his Cabinet resign.

Pope Benedict opens a consistory at Rome with a plea for an exchange of views among the belligerent nations as a preliminary to peace.

9.—Count Alvaro de Romanones is chosen Premier of Spain and forms a Cabinet.

Pope Benedict creates six new cardinals.

11.—Yuan Shih-kai accepts the throne of China, tendered him by the Council of State after a canvass of the vote on the proposal to restore monarchical government.

13.—The British House of Commons passes on second reading a bill to mobilize American and Canadian securities held in Great Britain by purchase or borrowing.

14.—The British House of Commons passes on second reading a bill extending the life of the present Parliament.

16.—The French Chamber of Deputies votes a war credit for the first quarter of 1916.

18.—Gen. Francisco Villa announces the abandonment of his revolution against the Carranza Government and his readiness to leave Mexico.

19.—Elections to the Greek Chamber result in the return of a large majority of the Gounaris party, the Liberals for the most part abstaining from voting.

20.—David Lloyd George, speaking in the British House of Commons, appeals to organized labor to relax union rules to permit the manning of new munitions factories.

21.—The German Reichstag passes a new war credit of $2,500,000,000, with 19 Socialists dissenting.

22.—The British House of Commons passes a bill to increase the Army by the addition of a fourth million men.

24.—A revolution in the Chinese province of Yunan under the governor, Tsai Ao, is reported from Peking.

25.—King Peter of Serbia arrives at Brindisi, Italy.

26.—The fall of the Persian Cabinet and the nomination of Prince Firman Firma as Premier is reported from Teheran.

CHRONOLOGY OF THE EUROPEAN WAR[1]

JANUARY

1.—The British battleship *Formidable* is sunk by a German submarine in the English Channel.

The Turks capture Ardahan, Transcaucasia.

2.—The Germans capture Borjimow, a strong position near Bolimow, Poland.

3.—The Russians defeat the Turks with heavy loss at Ardahan, capturing the town and many prisoners.

A pastoral letter of Cardinal Mercier reminding the Belgians of their allegiance to the exiled Government is read in the Belgian churches; the Cardinal is prevented by the Germans from reading his letter at Antwerp and is confined in the archbishop's palace at Malines.

4.—The Russians defeat the Turks again at Sari-Kamysh, Transcaucasia, with the capture of an army corps.

The French capture the village of Steinbach, Upper Alsace.

6.—The Vatican announces the acceptance by all the principal belligerents of Pope Benedict's proposal for the exchange of permanently disabled prisoners.

8.—The French capture German trenches at Soupir and occupy the village of Perthes.

10.—Dunkirk is bombarded by a squadron of 16 German aeroplanes.

The British occupy Mafia Island, off the coast of German East Africa.

13.—The Germans drive the French from their positions on the north bank of the River Aisne north of Soissons after two days of fighting; the French withdraw across the river along a front of five miles.

Tabriz, Persia, is occupied by the Turks.

14.—Russian forces begin a forward movement in northern Poland directed toward the German fortress of Thorn.

Swakopmund, the principal port of German Southwest Africa, is occupied by British forces.

15.—The Russians inflict a third heavy defeat on the Turks in the Caucasus.

16.—The Russians in Bukowina capture the Kirlibaba Pass.

The Turkish Admiralty announce the sinking of the French submarine *Saphir* in the Dardanelles.

17.—The Germans capture La Boisselle, northeast of Amiens; it is retaken by the French the following day.

19.—German airships bombard Yarmouth, King's Lynn, and other towns in the County of Norfolk, England.

24.—A British fleet puts to flight a strong German cruiser squadron in the North Sea, sinking the battle cruiser *Blücher* and seriously damaging the *Seidlitz* and *Derfflinger*.

The Russians in East Prussia occupy Pilkallen.

25.—The Germans are repulsed with heavy loss in a strong attack on the British positions at Givenchy, near La Bassée.

[1] Events affecting the relations of the United States with the belligerents are recorded under *American Chronology, supra.*

The Russians in East Prussia destroy the railroad station at Pogegen, north of Tilsit.

The British Admiralty announce the loss of the auxiliary cruiser *Viking* off the Irish coast.

26.—The British repulse a small Turkish force advancing on the Suez Canal near El Kantara.

The Austrians recapture the Uzsok Pass in the Carpathians.

28.—A Russian torpedo boat bombards the Turkish Black Sea port of Trebizond.

29.—Italy calls to the colors certain classes of reservists belonging to the field artillery and Alpine troops.

30.—The British steamers *Ben Cruachan, Linda Blanche* and *Kilcoan* are sunk by a German submarine in the Irish Sea.

The Russians occupy Tabriz, Persia, after routing the Turkish army north of the city.

31.—The British steamers *Tokomaru* and *Icaria* are sunk by a German submarine off Havre.

FEBRUARY

1.—The British hospital ship *Asturias* is attacked unsuccessfully by a German submarine off Havre.

2.—The Turks are repulsed in an attempt to cross the Suez Canal near Toussoum.

3.—The Russians repulse the Germans with immense loss in heavy attacks near Bolimow, Poland.

The Austrians evacuate Tarnow, Galicia.

The Turks are repulsed with heavy loss in renewed attacks on Toussoum and El Kantara.

4.—The German Government proclaims the waters around the British Isles a war zone after Feb. 18; decrees the destruction of every enemy merchant ship found therein, and warns neutrals of the hazards of navigation.

6.—The Cunard liner *Lusitania* flies the American flag in passing through the war zone as a protection against submarine attack.

7.—The British Foreign Office issues a statement on the German war-zone proclamation and the use of neutral flags by British ships.

8.—Russian warships in the Black Sea bombard Trebizond, in retaliation for the bombardment of Yalta, in the Crimea, by a Turkish cruiser; Russian destroyers sink over 50 Turkish sailing vessels serving as transports.

9.—A German Zeppelin is reported wrecked in a storm in the North Sea off the coast of Denmark.

British and French aeroplanes bombard Adrianople.

10.—The Germans attack with heavy forces the Russians invading East Prussia; the Russians are severely defeated east of the Masurian Lakes and retreat with heavy loss.

12.—A small Turkish force under German officers is annihilated by a British attack near Tor, on the Gulf of Suez.

13.—The Germans capture the villages of Wilsen and Obersengern in the Vosges, and Norroy, north of Pont-à-Mousson.

The Russians in the Carpathians capture the fortifications of Smolnik, east of Lupkow.

14.—An Austrian squadron bombards Antivari, Montenegro.

15.—The Germans capture Bielsk and Plock, Poland; the Austrians capture Nadworna, Bukowina, and cross the Sereth.

16.—The French advance on a two-mile front between Perthes and Beausé-jour and capture German positions in the forest of La Prêtre.

17.—Two German Zeppelins are wrecked in a storm off the Danish coast.

18.—The German proclamation of a war zone about the British Isles goes into effect.

The French recapture the village of Norroy, Lorraine.

The Germans occupy Tauroggen in pursuit of the retreating Russians.

19.—The British and French fleets begin a bombardment of the forts at the entrance to the Dardanelles.

20.—The Germans capture Hochrodberg and the villages of Dretzel and Widenthal, in the Vosges.

21.—The Russians check the German forces west of Grodno and force them back to the East Prussian frontier.

A German aeroplane bombards Braintree, Colchester and Marks Tey, northeast of London; a German Zeppelin bombards Calais, killing five civilians.

23.—A German force crosses the River Niemen at three points but is repulsed and scattered; two regiments of Russians surrounded in the Augustowo Forest break through the German lines.

24.—The Germans storm the town of Przasnysz, northern Poland.

The French destroyer *Dague* is sunk by an Austrian mine off Antivari, Montenegro.

The British converted cruiser *Clan Macnaughton* is reported missing by the Admiralty.

25.—The Allied fleet completes the reduction of the forts at the entrance of the Dardanelles; Sir Edward Grey declares Great Britain's complete sympathy with Russia's desire for free access to the sea *via* the Dardanelles.

The Germans begin a bombardment of the fortress of Ossowetz.

26.—The Russians recapture Przasnysz.

Adm. Oscar von Ingenohl is removed from the command of the German high-seas fleet.

27.—The Allied fleet begins a bombardment of the inner defences of the Dardanelles, 14 miles from the entrance.

Adm. Hugo von Pohl, Chief of the Admiralty Staff, is appointed to the command of the German battle fleet.

MARCH

1.—Premier Asquith announces in the British House of Commons the decision of the Allies to enforce an absolute embargo on all trade with Germany.

British warships begin a blockade of the coast of German East Africa.

2.—A detachment from the Allied fleet is landed at Kum-Kale, on the Asiatic side of the Dardanelles; the Russian cruiser *Askold* joins the attacking fleet.

3.—British Indian troops repulse attacks of Turkish and Arab forces northwest of Basra, on the Persian Gulf.

4.—The German submarine *U-8* is sunk by a British destroyer in the English Channel.

The German Zeppelin *L-8* is wrecked at Tirlemont, Belgium.

The Russians, on the offensive along the whole line, recapture Stanislau, Galicia.

5.—Three of the largest British battleships begin a long-range bombardment of the principal defenses on the European side of the Dardanelles.

10.—The British attack the German lines in Flanders in heavy force and make an important gain, capturing the village of Neuve Chapelle, near La Bassée.

The German submarine *U-12* is rammed and sunk by the British destroyer *Ariel*.

The German converted cruiser *Prinz Eitel Friedrich* enters Newport News; she is later interned at Norfolk.

11.—A British order-in-council giving effect to the proposed plans for cutting off Germany's seaborne commerce is signed by King George.

The British auxiliary cruiser *Bayans* is sunk by a German submarine off the west coast of Scotland.

French and British aeroplanes attack and destroy a German Zeppelin near Tirlemont, Belgium.

12.—The French Chamber of Deputies passes a bill calling out the 1916 class of recruits.

14.—The German cruiser *Dresden* is sunk by a British squadron near Juan Fernandez Island, off the Chilean coast.

16.—Rear-Adm. John M. de Robeck succeeds Vice-Admiral Carden in command of the Allied fleet at the Dardanelles.

17.—The Russians again enter East Prussia at two points.

18.—The British battleships *Irresistible* and *Ocean* and the French battleship *Bouvet* are sunk by floating mines in the Dardanelles.

The Russians occupy Memel, East Prussia; the Germans threaten threefold reprisals in kind for the destruction of East Prussian villages and estates by the Russians.

The Turkish Black Sea fleet bombards the shipyards at Theodosia, in the Crimea.

19.—A sortie of the besieged garrison of Przemysl is repulsed by the Russians with heavy loss.

A French submarine is reported lost in the Dardanelles.

20.—The Germans bombard Soissons Cathedral; in the Vosges they occupy the heights of Reichackerkopf.

A German aeroplane drops bombs in Deal harbor.

21.—The Russians evacuate Memel.

German Zeppelins drop bombs on Paris and Compiègne; another bombards Calais.

Major-Gen. Sir Wm. R. Robertson is appointed Chief of the British General Staff, succeeding Major-Gen. Sir A. J. Murray.

22.—The Austrian fortress of Przemysl surrenders to the Russians.

23.—Allied troops are landed on Gallipoli Peninsula from the Gulf of Saros.

The British rout a small Turkish force near Suez.

26.—The British Admiralty announces the sinking of the German submarine *U-29*.

The Russians defeat a Turkish army at Atkutur, Persia, with heavy loss.

The French capture the heights of Hartmannsweilerkopf, Alsace.

28.—The Russian Black Sea fleet bombards the Turkish forts at the entrance of the Bosporus.

The British steamer *Falaba* is sunk by a German submarine in St. George's Channel with the loss of 113 lives, including one American.

APRIL

3.—A large force of Bulgarian irregulars crosses the Serbian frontier near Vallandovo; they are repulsed after a violent engagement.

The Germans capture the village of Drei Grachten on the west bank of the Yser Canal.

The Turkish cruiser *Medijidieh* is sunk by a Russian mine near Odessa.

4.—The Russians advancing in the Carpathians occupy Cisna, near the Uzsok Pass.

5.—The French begin a vigorous attack on the St. Mihiel salient, between the Meuse and the Moselle.

6.—The Belgians recapture the village of Drei Grachten.

7.—The Russians capture Smolnik and the Rostock Pass in the Carpathians.

8.—The French report the capture of the villages of Gussainville, Fromezey, Fey-en-Haye and Regnieville in the attack on the St. Mihiel salient; they storm Les Eparges and make further advances.

11.—The German converted cruiser *Kronprinz Wilhelm*, the last German warship on the seas, enters Newport News; she is later interned at Norfolk.

13.—The French penetrate the German positions at Marcheville, on the St. Mihiel salient, but are unable to hold their advantage.

A German Zeppelin is destroyed by gunfire near Ypres.

14.—A German Zeppelin bombards several towns on the Tyne River, England, without effect.

British Indian troops rout a large Turkish force near Shaiba, Mesopotamia.

15.—The French capture the heights of Notre Dame de Lorette, north of Arras.

A French dirigible bombards the station and aviation sheds at Freiburg, Germany.

The British Government issues a White Paper containing an apology to Chile for the sinking of the German cruiser *Dresden* in Chilean waters by a British squadron on March 14.

16.—The French capture the height

of Schnepfen-Riethkopf, in the Vosges.

Two German Zeppelins bombard Lowestoft, Malden and other towns, and appear within 12 miles of London; a German aeroplane bombards towns in Kent.

17.—A Turkish torpedo boat is driven ashore on the coast of Chios and destroyed by a British squadron.

A French dirigible bombards Strassburg.

18.—The British capture Hill 90, an important position east of Ypres.

The British submarine *E-15* is sunk in the Dardanelles.

20.—The occupation of Keetmanskop, German Southwest Africa, by South African forces is announced from Cape Town.

21.—The German Government issues a decree revising the rules of contraband.

22.—The Germans, using asphyxiating gases, attack successfully the Allied lines north of Ypres on a front of five miles; they cross the Yser Canal and capture Langemarck and Steenstraate.

23.—The Allies proclaim a blockade of the coast of Kamerun.

24.—The Germans storm Lizerne, on the west bank of the Yser Canal north of Ypres, but are driven out by a French counter attack; they capture St. Julien and Kersselaere from the British.

The Austrians storm Ostry Mountain in the Carpathians, north of Beskid Pass.

25.—The Germans recapture Lizerne, north of Ypres, and storm the summit of Hartmannsweilerkopf, in the Vosges.

British forces are landed at various points on the Gallipoli Peninsula and French forces on the Asiatic side of the Dardanelles; the Russian Black Sea fleet bombards the Bosporus defenses.

26.—The French drive the Germans out of Lizerne and across the Yser Canal, and capture Het-Sase; they recapture also Hartmannsweilerkopf.

The French cruiser *Leon Gambetta* is sunk by an Austrian submarine in the Straits of Otranto.

28.—Allied aviators bombard Haltingen and Leopoldshöhe, Baden, and the Zeppelin hangars at Friedrichshafen.

29.—A German cavalry force invading the Russian Baltic province of Courland reaches the Dvinsk-Libau railway near Szawle.

Dunkirk is bombarded by a German gun at a distance of about 22 miles.

30.—A German Zeppelin bombards Ipswich and Bury St. Edmunds.

The Australian submarine *AE2* is sunk by Turkish warships in the Dardanelles.

An Italian force is defeated by rebels in Tripoli with heavy loss.

MAY

1.—The British destroyer *Recruit* is sunk by a German submarine off the Galloper Lightship, in the North Sea; two German torpedo boats are sunk by British destroyers in a running fight.

The American steamer *Gulflight*, bound for Rouen, is torpedoed without warning by a German submarine off the Scilly Islands with a loss of three lives; the vessel remains afloat and is towed to port.

2.—The Austro-Germans begin a general offensive against the Russians in western Galicia; the Russian line is pierced and driven back along the whole front from the Hungarian frontier to the junction of the Dunajec and Vistula rivers.

The British South African troops under General Botha capture Otymbingue, German Southwest Africa.

3.—Germany begins the concentration of all the classes of the Landsturm who have not yet served, beginning with the class of 1879.

4.—The Germans recapture Hill 60 and the villages of Zevecote, Zonnebeke and Westhoek, east of Ypres, in an assault prepared by the use of poisonous gases.

Italy denounces the Triple Alliance and resumes entire liberty of action.

5.—The Austro-Germans capture Gorlice, Galicia, after destroying it by bombardment; the Russians begin a retreat from the Zboro-Lupkow front in the Carpathians.

6.—The Austro-Germans capture Tarnow, Dukla and Jaslo, cross the Wisloka River near Jaslo, and drive the Russians from their last positions on the Dunajec and Biala Rivers.

Russian aviators bombard Constantinople.

7.—The Germans capture the Russian Baltic port of Libau by a combined land and sea attack.

The Cunard liner *Lusitania*, New York to Liverpool, is sunk without warning by a German submarine off Kinsale Head, off the Irish Coast, with a loss of 1,154 lives, among them 102 Americans.

8.—The British destroyer *Maori* is sunk by a mine off the Belgian coast.

9.—The French gain a substantial advance in an attack north of Arras along a front of 26 miles; the German advance line is pierced near Carency; the British gain ground toward Fromelles.

10.—A Russian offensive in eastern Galicia, on a 40-mile front between Czernowitz and Obertyn, makes substantial gains, driving the Austrians from the left bank of the Dniester.

German Zeppelins bombard Southend, Westcliff and other Essex seaside resorts.

11.—The French attack north of Arras drives the Germans out of strong positions at Notre Dame de Lorette and between Loos and Vermelles.

The Austro-German forces advancing in western Galicia cross the San River near Dvornik.

A French force captures Esoka, Kamerun.

A German Zeppelin flies over Sunderland, England; a German aeroplane bombards St. Denis, a suburb of Paris.

Germany issues a circular statement in regard to "mistaken" attacks by German submarines on neutral merchant vessels.

12.—The Austrians in eastern Gali-

cia, retreating before the Russians on a front of nearly 100 miles, are driven across the River Pruth.

The French capture Carency, north of Arras.

Windhoek, capital of German Southwest Africa, is occupied without resistance by the South African forces under General Botha.

The British battleship *Goliath* is sunk by Turkish destroyers in the Dardanelles.

The Bryce commission publishes the report of its investigation of German atrocities in Belgium.

13.—The French continue their gains north of Arras with the capture of Albain-St. Nazaire and the entire forest of La Prêtre.

The British Admiralty announces that the British submarine *E-14* penetrated the Dardanelles and sank two Turkish gunboats and a Turkish transport.

14.—The Germans capture Jaroslau, Galicia; the Austrians occupy Rudnik and Lezaysk, on the San, and Dobromil, Stary Sambor and Bcryslau, in the Carpathians.

15.—The Austrians occupy Sambor, in the Carpathians; the Russians defeat a German force on the Dubysa River, and in Bukowina cross the Pruth in pursuit of the Austrians.

16.—The British make a gain of a mile over a front of two miles between Richebourg-l'Avoué and Festubert; the Germans abandon their positions on the west bank of the Yser Canal.

17.—German aircraft bombard Ramsgate, England; two Zeppelins are destroyed by French batteries and war vessels near Calais.

18.—The Austro-Germans occupy Sienawa, north of Przemysl, and force a crossing of the San.

21.—The French drive the Germans from their last positions on the Lorette hills.

22.—Italy orders full mobilization of army and navy and declares a state of war in the provinces bordering the Austrian frontier and the communes and islands of the Adriatic coast.

A German aeroplane bombards Paris.

23.—Italy declares war on Austria-Hungary from May 24; the German Ambassador is ordered to leave Italy; Italian and Austrian troops clash at Forcellini di Montozzo, in the pass between Pont di Legno and Pejo.

24.—The Italians invade Austria along a 60-mile front, capturing Caporetto, Cormona, Cervignano, and Terzo; Austrian aeroplanes and warships bombard Venice, Ancona and other towns on the Adriatic; the Italian destroyer *Turbine* is sunk near Barletta.

A British submarine sinks two Turkish transports in the Sea of Marmora and torpedoes a third in Constantinople harbor.

25.—The British battleship *Triumph* is sunk by a Turkish submarine in the Dardanelles.

Italian aviators bombard the power and railroad stations at Monfalcone.

Prince von Bülow and Baron von Macchio, German and Austrian Ambassadors to Italy, leave Rome for Switzerland; Riccardo Bollati, Italian Ambassador to Germany, leaves Berlin.

The American steamer *Nebraskan*, westbound, is torpedoed without warning by a German submarine off the south coast of Ireland; she is able to return to Liverpool under her own power.

26.—The Austro-Germans reach the railroad between Przemysl and Lemberg.

The Italian Government declares a blockade of the Austrian and Albanian coasts.

27.—The Italians cross the Isonzo River near Monfalcone and capture Pilcante and Ala, on the Adige.

The Russians force the Germans at Sieniawa to retreat across the San with heavy loss.

Eighteen French aeroplanes bombard a munitions factory at Ludwigshafen, on the Rhine.

The British battleship *Majestic* is sunk by a Turkish submarine in the Dardanelles.

The Canadian Pacific liner *Princess Irene*, a naval auxiliary vessel, is destroyed by an explosion in the Thames off Sheerness, with a loss of over 300 lives.

An Austrian submarine is sunk by Italian destroyers in the Adriatic.

28.—The British and French capture important Turkish positions on Gallipoli Peninsula.

Austrian aeroplanes bombard Venice.

29.—The Germans evacuate their last positions in Ablain-St. Nazaire, north of Arras.

30.—The French begin an attack on the Labyrinth, a strong German position east of Neuville-St. Vaast.

The Russians cross the Lubaczowka and occupy Monasterz.

The Italians occupy the ridge of Monte Nero, northwest of Tolmino.

An Italian dirigible bombards the Austrian arsenal at Pola.

German Zeppelins bombard Helsingfors, Finland.

31.—The Germans storm three of the north forts of Przemysl; the Austrians occupy Stryi.

German Zeppelins bombard Ramsgate, Brentwood and suburbs of London.

JUNE

1.—The Austro-Germans capture two more of the north forts of Przemysl.

2.—A German transport is sunk by a British submarine in the Sea of Marmora.

3.—The Austro-Germans capture Przemysl after storming the northern forts in a night attack; the Russians continue to advance against the Austrians in Bukowina.

British forces operating on the Tigris occup Kut-el-Amara; they sink the Turkish gunboat *Marmaris* and capture the transport *Mosul*.

The Republic of San Marino declares war on Austria.

4.—The Allied troops gain ground in a general assault on the Turkish lines at the southern end of the Gallipoli Peninsula.

German dirigibles bombard Harwich, at the mouth of the Humber.

5.—The Austro-Germans advancing from Przemysl storm Starzawa; east of Stry they capture a bridgehead at Zurawna on the Dniester.

A German squadron approaches the Gulf of Riga but withdraws before the Russian Baltic fleet; the Russian transport *Yenesei* is sunk by a German submarine, and a German transport and torpedo boat by Russian submarines.

6.—The Austrians cross the Dniester and capture Kalusz, north of Zurawna.

A German Zeppelin bombards towns on the northeast coast of England, killing 24 persons and injuring 40.

7.—The Germans report the passage of the Windau River, north of Kurschany, Courland.

A British aeroplane driven by R. A. J. Warneford destroys a German Zeppelin in an aerial battle near Ghent; three British aeroplanes destroy an airship shed at Evere, Belgium.

The destruction of the German armed steamer *Hermann von Wissman* on Lake Nyassa by a British naval force is reported at London.

8.—The Italians occupy Monfalcone and capture the Freikopel Pass in the Carnic Alps.

The Austro-Germans capture Stanislau from the Russians and cross the Dniester.

A French transport is sunk by Turkish shells in the Dardanelles.

An Austrian aeroplane bombards Venice; another destroys an Italian dirigible near Fiume.

9.—The French capture the village of Neuville-St. Vaast, north of Arras.

The Russians resume the offensive in Galicia on the Lityma-Zurawna front; the Austro-German army in Bukowina crosses the Pruth and joins the Galician armies.

A small British cruiser is torpedoed by an Austrian submarine in the Adriatic off St. Jean Medua.

The British Admiralty announces the sinking of the German submarine *U-14* and the capture of its crew.

10.—The Russians defeat with heavy loss the Austro-Germans who crossed the Dniester near Zurawna.

Two British torpedo boats are sunk by a German submarine off the east coast of England.

11.—The Austro-Germans again cross the Dniester east of Horodenka and retake Zurawna; the Russians abandon the last of their positions in Bukowina and retreat across the frontier.

The Italians complete the occupation of the city of Gradisca, north of Monfalcone.

13.—The Austro-Germans again taking the offensive in Galicia capture Russian positions along a front of 43 miles, between Cyerniawa and Sieniawa.

An Italian airship bombards the arsenal at Pola, causing serious damage.

15.—A German Zeppelin bombards towns on the northeast coast of England, killing 16 persons and injuring 40; a squadron of 23 Allied aeroplanes bombard Karlsruhe, Baden.

The French torpedo boat *331* is sunk in collision with the British steamer *Arleya*.

16.—The French capture Althof and Steinbrück, Alsace; the British resume the offensive near Ypres and gain a small advance north of Hooge.

17.—The French make substantial gains towards Souchez, north of Arras, in two days of heavy fighting.

The Italian submarine *Medusa* is torpedoed and sunk by an Austrian submarine in the Adriatic.

19.—The Austro-Germans capture Grodek and Komarno, Galicia, and cross the Tanew River; they force the Russians back on a front of 24 miles between Janow and Rawa Ruska.

The French storm the Fond de Buval, an important position near Souchez, and occupy Metzeral, Alsace, evacuated by the Germans.

21.—The Austro-Germans capture Rawa Ruska and the railway to the north of Lemberg; the Russians retreat to the last of the positions before Lemberg.

Dunkirk is bombarded at long range by German artillery.

22.—Lemberg is evacuated by the Russians in good order and occupied by the Austro-Germans; at Snowidow the Russians inflict a severe defeat on the Austro-Germans, driving them across the Dniester with heavy loss.

The Germans capture an important position near Ban-de-Sapt, in the Vosges; the French capture Sondernach, south of Metzeral.

The Allied forces on the Gallipoli Peninsula gain a considerable advance against the Turks in an attack along two-thirds of the front.

23.—The Austro-Germans cross the Dniester between Halicz and Zurawno; they are driven back across the river by the Russians, who capture Mount Dezymianna, southeast of Nijniff.

25.—The Italians announce the capture of Globna, north of Plava.

The British South African force captures the fortified port of Bukoba, German East Africa.

26.—The Russians south of Lemberg retreat to the line of the Gnila Lipa River, a tributary of the Dniester; in Poland the Germans renew the offensive on the Czarow-Zawichost front.

A British submarine sinks a Turkish transport laden with troops in the Sea of Marmora.

An Italian torpedo boat is sunk by an Austrian submarine in the Adriatic.

The Italians occupy the summit of Zeillenkofel, near the Monte Croce Pass.

The Montenegrins enter Scutari, Albania.

28.—The Austro-Germans occupy Halicz and cross the Dniester along the whole front; in eastern Galicia they reach the Gnila Lipa and Bug rivers; north of Rawa Ruska they advance in Poland and capture Tomaszow.

The British forces make an important advance near Krithia, on Gallipoli Peninsula.

The Leyland line steamer *Armenian* is sunk by a German submarine off the coast of Cornwall with a loss of 29 men, several of them Americans.

29.—The Austro-Germans occupy Zawichost, evacuated by the Russians.

30.—The Austro-Germans capture the Russian positions east of the Gnila Lipa River near Kunioze and Luozynoe and continue to advance between the Vistula and the Bug.

The Russian Admiralty reports the repulse of a German naval squadron which bombards the Baltic port of Windau and attempts to land troops.

JULY

1.—The Austro-Germans in Poland capture Stronza and Krasnik.

2.—The Austro-Germans advance in eastern Galicia and capture Jozefow, on the Vistula, in Poland.

A Russian cruiser squadron encounters two German squadrons of light cruisers and torpedo boats off the Island of Gothland; the German mine layer *Albatross* is driven ashore and destroyed and the German squadrons retreat; the German battleship *Pommern* is sunk by a British submarine at the entrance to Danzig Bay.

3.—The Germans storm the French positions along a front of a third of a mile northwest of Regnieville and capture part of the forest north of Fay-en-Haye.

German aeroplanes bombard Harwich, England, and a British torpedo-boat flotilla, and attack Nancy, France.

4.—The Austro-Germans in southern Poland pierce the Russian lines on both sides of Krasnik.

The Germans storm a French position on the western border of the forest of La Prêtre.

A German submarine sinks a French transport in the Dardanelles.

A German submarine is sunk by French cruisers in the English Channel.

The German cruiser *Königsberg* is destroyed in the Rufigi River, German East Africa, by the British monitors *Severn* and *Mersey*.

5.—The Austro-Germans in eastern Galicia reach the Zlota Lipa River and dislodge the Russians from the west bank; in southern Poland they are checked severely by a Russian flank attack northeast of Krasnik; at Krylow the Russians evacuate their positions on the west bank of the Bug.

6.—The Italian Government proclaims a blockade of the Adriatic.

7.—The French capture German trenches along a half-mile front north of Souchez.

The Italian armored cruiser *Amalfi* is sunk by an Austrian submarine in the Adriatic.

8.—The French capture important German positions near Fontenelle; the Germans gain east of Ailly.

9.—The entire German force in German Southwest Africa surrenders to the British South African troops under General Botha.

The Cunard liner *Orduna*, off Queenstown on her westbound voyage, narrowly escapes a torpedo fired by a German submarine, which then attempts unsuccessfully to shell the steamer.

11.—The Germans capture the cemetery of Souchez by the use of poisonous gases.

The Germans capture Russian positions along a front of two and a half miles near Lipina, in the East Prussian front.

12.—The Allied forces on Gallipoli Peninsula make an important advance.

13.—The Germans gain an advance of a quarter of a mile along a narrow front northeast of Vienne-le-Château, in the Argonne.

14.—The Germans capture Przasnysz, in northern Poland, 50 miles from Warsaw.

The Allied forces in Kamerun capture Dehane and Tjahe.

15.—The Germans cross the Windau and Venta Rivers in northern Poland; the Russians withdraw across the Narew between the Pissa and the Orzyc; the Germans capture Crechanow and Krasnosielo and pierce the Russian lines south of Zielona.

The French recapture the most important of the positions taken by the Germans in the Argonne.

16.—The Italians report the capture of the Venerodolol and Brizio passes.

17.—The Germans attack in force near Les Eparges and carry a small section of French trenches.

The Germans defeat the Russians near Autz and force them to retreat behind the Iljanka River; they capture also the towns of Poremky, Wykplock, Piaski and Krasnostaw.

The British court of inquiry on the sinking of the *Lusitania* finds that the liner was lost wholly by the act of a German submarine which aimed to destroy also the lives of the passengers.

18.—The Russians begin the evacuation of Warsaw.

The Italian cruiser *Giuseppe Garibaldi* is sunk by an Austrian submarine off Cattaro after taking part in a bombardment of the port.

19.—The Germans advance against the Russians along practically the whole Polish front, capturing Blonie and Grojec; they occupy also the port of Windau, on the Baltic.

20.—The French advance in the valley of the Fecht towards Münster.

The Austrians occupy Radom, Poland.

21.—The French gain a further advance in the Vosges north of Münster.

The Russians on the Ivangorod front withdraw into the fortress.

23.—The Germans force the passage of the Narew between Rozan and Pultusk and drive the Russians across the Vistula northwest of Ivangorod; near Rozalin in Courland they defeat the retreating Russians with heavy loss.

French forces in Kamerun capture Moopa.

24.—The French capture strong German positions at Ban-de-Sapt, in the Vosges.

The Italians destroy one of the forts at Plava.

25.—The American steamer *Leelanaw*, Archangel to Belfast with flax, is sunk by a German submarine north of Scotland after providing for the safety of the crew.

26.—The French in Alsace storm a

strong German position north of Münster, dominating the valley of the Fecht.

An Italian squadron captures the Austrian island of Pelagosa.

A German destroyer is sunk by a British submarine near the German coast.

The French submarine *Mariotte* is sunk by a German submarine in the Dardanelles.

27.—Austrian cruisers bombard the Italian coast near Pesaro, and Austrian aeroplanes bombard Ancona and Verona.

French forces in Kamerun capture Mombi.

The withdrawal of the Italian forces from Fezzan to the coast of Tripoli before the revolted Senussi tribes is reported from Rome.

28.—The Austrians force the crossing of the Vistula at several points northwest of Ivangorod; the Russians attack at Kamionka and drive the Austrians across the Bug.

29.—The Germans force the passage of the Vistula at Radomka and of the Vieprz at Trawnski; near Choniel they break through the Russian positions along a front of 15 miles.

30.—The Austrians occupy Lublin and cross the Bystrzyca River.

The Germans capture 500 yards of British trenches at Hooge, east of Ypres, by the use of flame projectors.

The British steamer *Iberian* is sunk by a German submarine off Queenstown after a refusal to stop for search; six of the crew are killed by shell fire, three of them Americans.

31.—A squadron of seven French aeroplanes bombards the station and aeroplane factory at Baden.

AUGUST

1.—The Austro-Germans occupy Chelm, east of Lublin.

2.—The Germans occupy Mitau, 25 miles southwest of Riga; the Austrians break the Russian line east of Leczna and north of Chelm.

A German transport is reported sunk by a British submarine in the Baltic; and two Turkish steamers by a British submarine in the Sea of Marmora.

3.—The Russians abandon the Bloniе-Nadarzyn line and retreat on the Warsaw positions; the Germans capture the Narew crossing near Ostrolenka.

The British transport *Arneuron* is reported sunk by a German submarine at the Dardanelles.

4.—The Austrians capture the western forts of the fortress of Ivangorod; the Russians withdraw across the Vistula and destroy the bridges.

5.—The Germans enter Warsaw after storming the western fortifications in a night attack; the Russians retreat across the Vistula and destroy the bridges.

The Austrians occupy Ivangorod.

6.—The Germans capture and then lose one of the outworks of Ossowetz; they begin an attack on Kovno and capture one of the forts at Novo Georgievsk.

The British begin the debarkation of a new force in Suvla Bay, on the west side of the Gallipoli Peninsula.

7.—The Russians defeat the German forces threatening Riga and force them to retire; the Germans capture Serock and Segrze and cross the Vistula near Warsaw.

The British land a new force on the Gallipoli Peninsula at Karachali and Ari Burnu, on the Gulf of Saros.

The Italian submarine *Nereide* is reported sunk by an Austrian submarine off Pelagosa.

8.—The Germans capture Praga, across the Vistula from Warsaw, and complete the investment of Novo Georgievsk; the Austrians cross the Wieprz east of Ivangorod.

A German fleet of nine battleships and 12 cruisers attempting to force the entrance of the Gulf of Riga is defeated by the Russians; one German cruiser and two destroyers are damaged by mines.

The British patrol boat *Ramsay* is sunk in the North Sea by the German auxiliary cruiser *Meteor*.

9.—The British capture German trenches along a front of 1,200 yards near Hooge.

The British auxiliary cruiser *India* is sunk by a German submarine off Restfjord, Norway, and the British destroyer *Lynx* by a mine in the North Sea.

The German auxiliary cruiser *Meteor* is surrounded by a British squadron and is blown up by her commander.

The Turkish battleship *Kheyr-ed-Din Barbarossa* is sunk by an Allied submarine in the Sea of Marmora.

German Zeppelins bombard towns on the east coast of England, killing 14 persons; one of the Zeppelins is destroyed off Ostend.

A squadron of Allied aeroplanes bombard Saarbrücken, Germany.

10.—The Germans capture Lomza and the Warsaw-Petrograd railway junction south of Ostrow, and occupy the fortress of Benjaminow, east of Novo Georgievsk.

The British War Office reports a substantial gain near Krithia, on the Gallipoli Peninsula, and important advances in the Suvla Bay region.

11.—The Germans in Poland occupy Zambrowa and Lukow.

The Russians evacuate Van, Armenia, which is occupied by the Turks.

The Austrian submarine *U-12* is officially reported sunk by an Italian submarine in the Adriatic.

12.—The Germans in Poland occupy Sokolow and Siedice; the Russians repulse the Germans south of Mitau and drive them beyond the Aa.

German Zeppelins bombard towns on the east coast of England, killing six persons.

The Turkish gunboat *Berk-i-Satvet* and an empty transport are officially reported sunk by a British submarine in the Dardanelles.

A Turkish transport is sunk by a British aeroplane in the Dardanelles.

13.—The Germans occupy the district of Wisznice, Poland, and cross the Rolodawa.

The Austrian submarine *U-3* is sunk

by a French destroyer in the Adriatic.

14.—The Germans check the offensive of the Russians near Kubisko, Courland, and repulse a sortie from Kovno; in Poland they break the Russian line near Losyce.

The British transport *Royal Edward* is sunk by a German submarine in the Ægean Sea with a loss of nearly 1,000 men.

15.—The Germans break the Russian line between the Narew and the Bug; further south they cross the Bug at Drohiczyn and occupy Losyce and Miedzyrzec.

Austrian aeroplanes bombard Venice.

16.—The Germans storm several of the outlying forts of Kovno and capture a fort at Novo Georgievsk.

A German submarine bombards the towns of Parton, Harrington and Whitehaven, on the west coast of England.

17.—The Germans storm the fortress of Kovno and capture two forts at Novo Georgievsk.

A small British cruiser and a British destroyer are sunk in an engagement with a German torpedo-boat flotilla off the west coast of Jutland.

German Zeppelins bombard the east coast of England, killing ten civilians and wounding 36.

The Russian War Office reports the reoccupation of Van, Armenia.

18.—The Germans reach the railroad from Bialystok to Brest-Litovsk north of Bielsk and cross the Bug at Melnik; they storm two forts at Novo Georgievsk.

19.—The Germans capture the fortress of Novo Georgievsk; they cross the Niemen east of Tykocin and repulse the Russians between Augustowo and Ossowetz.

A strong German squadron attempting to cover the landing of troops at Pernau on the Gulf of Riga is severely defeated by the Russian fleet, the Russians losing two gunboats.

The German battle-cruiser *Moltke* is sunk by a British submarine in the Baltic.

The British submarine *E-13* is stranded on the Danish island of Saltholm; German torpedo boats torpedo and shell the submarine and fire on the crew attempting to escape.

The White Star liner *Arabic* is sunk without warning by a German submarine off Fastnet; two Americans are among the 44 victims.

20.—The Germans capture Bielsk, north of Brest-Litovsk.

A French aeroplane sinks a Turkish transport in the Dardanelles.

21.—Italy declares war against Turkey.

Great Britain and France declare cotton absolute contraband.

22.—The Germans occupy the fortress of Ossowetz, evacuated by the Russians.

A German destroyer is sunk by French torpedo boats off Ostend.

23.—Austro-German cavalry enters Kovel, 40 miles southeast of Brest-Litovsk.

The Russian Admiralty claims the destruction of two German cruisers, eight torpedo boats, and four barge loads of troops in recent naval battles in the Gulf of Riga.

24.—The Germans capture Knyszyn and cross the Narew south of Tykocin; at Dobbynka they break through the advanced positions of Brest-Litovsk.

A Russian auxiliary vessel is reported sunk by a German submarine in the Gulf of Finland.

25.—The Austro-Germans occupy the fortress of Brest-Litovsk, evacuated by the Russians, and enter Bialijstok.

The Italians capture Lahgoscure Pass and the heights of Corno di Bedole.

A squadron of 62 French aeroplanes bombards the ammunition factory at Saarlouis, Rhenish Prussia.

The Allies declare a blockade of the coast of Asia Minor and Syria from Samos to the Egyptian frontier.

26.—The Germans occupy the fortress of Olita, evacuated by the Russians.

A German submarine is sunk off Ostend by bombardment from a British aeroplane.

27.—The Austrians penetrate at several points the Russian lines on the Zlota Lipa River, in eastern Galicia.

French aeroplanes bombard the station at Müllheim, Baden, and a gas factory at Dornach.

28.—The Italians capture the height of Cima Cista, northeast of Trent.

The French aerial squadron guarding Paris repulses an attack by six German aeroplanes, destroying one.

The British on the Gallipoli Peninsula capture an important position at Anafarta.

29.—The Germans capture Lipsk, west of Grodno.

30.—The Russians check the Austro-German offensive in eastern Galicia by strong counter-attacks at the Stripa.

A British submarine damages the Galata Bridge at Constantinople.

31.—The Austrians capture the fortress of Lutsk and occupy Zborow.

SEPTEMBER

1.—The Russian War Office announces the appointment of General Alexieff as Chief of Staff, and General Ruzsky as commander of the armies in the north.

2.—The Germans occupy the fortress of Grodno, evacuated by the Russians, who withdraw across the Niemen; the Germans storm the bridgehead at Lennewaden, on the Dvina, northwest of Friedrichstadt; the Russians return across the river and repulse them.

The Rumanian Government stops further export of cereals and transit of gold through the country.

3.—The Germans storm the bridgehead at Friedrichstadt, on the Dvina; the Russians retreat across the Dvina at Lennewaden.

4.—The Russians evacuate the bridgehead at Kaftuska Beresa.

The British submarine *E-7* is sunk by a Turkish warship in the Sea of Marmora.

The Allan liner *Hesperian*, out of Liverpool for Montreal, is torpedoed without warning by a German submarine off the coast of Ireland; after remaining afloat for 34 hours, the vessel

sinks as it is being towed into Queenstown; 17 persons are drowned.

5.—A squadron of 40 French aeroplanes bombard Saarbrücken, Rhenish Prussia.

6.—Czar Nicholas of Russia assumes command of the Russian armies; the Grand Duke Nicholas is appointed Viceroy of the Caucasus and commander-in-chief of the Caucasian army.

The Turkish destroyer *Yar Hissar* is reported sunk by an Allied submarine in the Sea of Marmora.

7.—The Russians defeat the Austro-Germans with heavy loss near Tarnopol, Galicia; the Germans capture Wolkowysk, southeast of Grodno.

German Zeppelins bombard towns on the east coast of England, killing 17 and injuring 39 persons; a French aeroplane squadron bombards Freiburg.

The German Admiralty announces the loss of the submarine *U-27*.

Italy declares cotton contraband of war.

8.—The Russians defeat the Austrians with heavy loss near Trembowla; the Austro-Germans occupy the fortress of Dubno, evacuated by the Russians.

German aircraft bombard the eastern counties of England and the London district, killing 20 persons and injuring 88.

9.—The Russians again defeat the Austrians on the Sereth above Trembowla.

10.—The Germans capture Skidel, east of Grodno; the Austrians capture Alba, west of Kossow, but continue to retreat from the Sereth to the Stripa before the Russians, who occupy Tlust.

11.—The Russians repulse heavy Austrian attacks north of Tarnopol, taking many prisoners, and pursue the Austrians retreating from the Sereth.

German Zeppelins bombard towns on the east coast of England without casualties.

12.—The Germans reach the Vilna-Petrograd railway at Sventsiany, between Vilna and Dvinsk.

German Zeppelins bombard towns on the east coast of England, without casualties.

French aeroplane squadrons bombard Trèves, Rhenish Prussia, and Donaueschingen and Marbach, Baden.

13.—The Russians cross the Goryn River near Derazno and drive the Austrians out of Rydomel; they occupy Beniave on the Stripa and cross the river here and west of Trembowla.

A German Zeppelin and a German aeroplane bombard points on the east coast of England, the former without casualties, the latter injuring seven persons.

14.—A German submarine is reported sunk by a French torpedo boat off the Dardanelles.

15.—The Germans occupy Pinsk and force the Russians across the Dvina at Liwenhof, northwest of Dvinsk.

16.—Russia calls to the colors reserves of the territorial army.

The Allies present a joint note to Bulgaria asking for a definite declaration of her position.

17.—The Germans occupy Vileika, east of Vilna; farther north they capture Vidzy and cross the Szczara.

18.—The Germans occupy Vilna, evacuated by the Russians.

French artillery destroys five bridges across the Meuse at St. Mihiel; the French capture a German position north of Berry-au-Bac.

19.—The British transport *Ramazan* is sunk by a submarine in the Ægean with a loss of 315 Indian troops.

20.—The French cross the Aisne-Marne canal near Sapigneul.

21.—The Russians retreating from Vilna make good their escape from the German attempt at envelopment; they drive the Germans out of Smorgon, west of Vileika; the Germans capture Ostrow.

Bulgaria orders a general mobilization of all military forces and concentrates troops near the Serbian frontier.

Premier Venizelos of Greece asks Great Britain and France for 150,000 troops on the understanding that Greece will mobilize for the assistance of Serbia.

22.—The Russians drive the Austrians across the Styr, east of Lutsk.

The Austro-German artillery bombard the Serbian positions along practically the whole frontier.

Premier Radoslavoff of Bulgaria announces the signing of a convention with Turkey for the future maintenance of armed neutrality.

French aviators bombard Stuttgart, capital of Württemberg.

23.—The Russians drive the Germans from Vileika, before Dvinsk, capturing several guns, and occupy Woinitsy, northwest of Dubno.

The Serbians repulse Austrian attempts to cross the River Drina near Vishegrad.

The Italians capture the heights of Monte Coston.

Greece decrees a general mobilization of her land and naval forces.

24.—The Germans attempt to storm Dvinsk but are repulsed at all points; the Russians recapture the fortress of Lutsk and occupy Khorupagne and Golovtchitza, near Dubno; the Germans capture Negniewitschi, northeast of Novogrodek.

25.—The Allies open a vigorous offensive on the western front after several days of bombardment; the French in Champagne penetrate the German lines along a front of 15 miles, between Auberive and Ville-sur-Tourbe; the British capture five miles of trenches south of the La Bassée Canal, and occupy Loos, part of Hulluch, and Hill 70, an important position dominating Lens.

26.—The French occupy Souchez and make further gains in Champagne.

The Allies notify Greece that they are prepared to land a strong force in the event of an attack on either Greece or Serbia.

Bulgaria assures the Entente powers that the mobilization of her forces was ordered in the national interest and had no aggressive intent.

27.—The Germans recapture the fortress of Lutsk and recross the Styr.

28.—The British make further gains around Loos and attack the third line

of German trenches; the French advance slowly in Champagne.

The Italian battleship *Benedetto Brin* is wrecked in Brindisi harbor by an internal explosion.

Sir Edward Grey in the British House of Commons warns Bulgaria against aggressive action on the side of the Teutonic allies.

29.—The French in Champagne penetrate the second line of German trenches at several points and capture Hill 191, north of Massiges; they reach also Hill 140, the crest of the heights between Souchez and Uimy; the Germans recapture from the British a small portion of the trenches at Hulluch.

The rout by the British of a large Turkish force at Kut-el-Amara, on the Tigris, 90 miles southeast of Bagdad, is announced in the British House of Commons.

30.—The offensive on the eastern front passes almost exclusively to the Russians.

The Greek Chamber ratifies the decree of mobilization and authorizes a war loan of $30,000,000; Premier Venizelos declares the purpose of the Government to maintain all her obligations towards Serbia.

OCTOBER

1.—The Russians capture several villages on the northern front and drive the Germans back from the Vileika railway.

3.—The Germans recapture the Hohenzollern Redoubt from the British north of Hulluch and a highway crossing from the French near Givenchy.

4.—Russia presents an ultimatum to Bulgaria demanding dismissal of German and Austrian officers within 24 hours.

5.—Bulgaria returns an unsatisfactory reply to the Russian ultimatum and a joint note of the Allies; the Russian, French, British, Italian and Serbian Ministers at Sofia demand their passports.

French and British troops are landed at Saloniki, in response to the invitation of the Greek Government; the Greek Chamber debates the landing of Allied troops at Saloniki and passes a vote of confidence in the Venizelos Government; King Constantine withdraws his support and the Ministry resigns.

6.—Austro-German forces cross the Drina, Save and Danube into Serbia at eight points.

The Germans penetrate the Russian positions before Dvinsk over a front of three miles.

The French in Champagne capture the hill and village of Tahure, a point of support in the second line of German trenches.

7.—Russian cruisers bombard the Bulgarian port of Varna.

8.—The French capture important German fortifications southeast of Tahure.

A German transport is reported sunk by a British submarine in the Baltic.

Serbia dismisses the Bulgarian Minister.

Bulgaria takes over from Turkey the Dedeaghatch railway.

The Allies request the new Premier, Zaimis, of Greece, to define the policy of his Government.

9.—The Austro-Germans occupy Belgrade; the Serbians check the armies crossing the Drina and the Save.

The Germans carry the Russian positions along a front of five miles northwest of Dvinsk.

10.—The Russians check the German attack on Dvinsk and assume the offensive with small local successes.

Pope Benedict XV writes to the Sultan of Turkey interceding for the Armenians.

11.—The Russians break the Austrian line and cross the Stripa near Haivorenka.

The Bulgarians begin an attack on Serbia by crossing the border near Vlasina and at three other points east of Nish; the Austro-Germans capture the fortress of Semendria, on the Danube.

Premier Zaimis of Greece announces in the Chamber a policy of armed neutrality.

12.—Greece replies to Serbia's request for aid under the treaty of alliance that the treaty applies only to isolated attacks by Bulgaria and not to a general war.

Great Britain dismisses the Bulgarian Minister; Premier Viviani of France announces that Russia will take joint action with the Allies against Bulgaria.

The Russians gain further advances in the Stripa region and before Dvinsk.

Six German steamships are reported sunk within 24 hours by British submarines in the Baltic.

Edith Cavell, an English nurse, is shot by the Germans at Brussels after court-martial for harboring Allied soldiers and assisting them to escape.

13.—The Germans attack in strong force in Champagne but carry only a small section of French trenches in the Givenchy Wood; the British storm important German positions southwest of St. Elie, including the main trench of the Hohenzollern Redoubt.

The Russians retire across the Stripa before heavy Austrian attacks.

German Zeppelins bombard a part of the London district, killing 55 persons and injuring 114; 15 of the killed and 13 of the wounded are soldiers, several of them Canadians.

A German destroyer is sunk by a British submarine in the Baltic, off the Danish coast.

The Rumanian Cabinet decides to maintain neutrality.

14.—Bulgaria formally declares war on Serbia.

The Germans capture the Serbian fortress of Pozarevac; the Bulgarians occupy the frontier passes between Belorradjik and Kujazevic, and strike at the Nish-Saloniki railroad at Vranja, in the region of Valandovo.

The Germans capture an important French position in Champagne, near Auberive, and storm the trenches on the summit of Hartmannsweilerkopf, in the Vosges.

The Russians assume the offensive before Dvinsk and pierce the German line; they drive the Germans across the Pripet near Nobel and gain against the Austrians west of Tarnopol.

The Italians capture Pregasina, on the Trentino frontier.

A German torpedo boat is sunk by a British submarine in the Baltic, off the Danish coast.

15.—Great Britain declares war on Bulgaria.

The Bulgarians force frontier passes south of Negotin and storm the eastern forts of Zayechar; French troops engage the Bulgarians near Valandovo.

A German torpedo boat is sunk in collision with a ferryboat in the Baltic.

16.—The French recapture the summit of Hartmannsweilerkopf, and storm a strong position southeast of Neuville-St. Vaast, and trenches near Peillon, Lorraine; French aeroplanes bombard Trèyes, Rhenish Prussia.

The Allies declare a blockade of the Bulgarian coast on the Ægean Sea.

Five German transports are reported by the Russian Admiralty to have been sunk, and one driven ashore, by British submarines in the Baltic.

17.—France declares war on Bulgaria.

Great Britain offers Greece the island of Cyprus in exchange for fulfilment of her treaty obligations to Serbia.

The Bulgarians capture Egri-Palanka and cut the Nish-Saloniki railroad at Vranja; the Allied force repulses the Bulgarians at Valandovo.

The Allies land a force at Enos and seize the Dedeaghatch railroad.

18.—Russia declares war against Bulgaria in an imperial manifesto denouncing the treachery of the Bulgarian Czar.

The Austrians capture Obrenovatz, Serbia, on the Save.

The Russians capture Czartorysk and other positions on the Styr.

The British War Office announces the recall of Gen. Sir Ian Hamilton and the appointment of Gen. Sir Charles C. Monro to command the Dardanelles expedition.

Great Britain requests the American Government to investigate the execution of Miss Edith Cavell, a British nurse, in Brussels; Serbia protests to the United States against the extermination of the civil population by the Germans.

19.—Italy declares war on Bulgaria; an Italian naval squadron leaves for the Ægean.

Japan adheres to the agreement of Great Britain, France and Russia not to make a separate peace.

20.—The Russians capture important German positions southeast of Baranovichi; the Germans reach the Dvina northeast of Mitau and capture the bank from Borkowitz to the mouth of the Berse.

21.—The Italians begin a general offensive from the Tyrol to the Adriatic and capture many Austrian positions.

The Russians capture Austrian positions and 8,000 prisoners about Novo Alexinetz, north of Tarnopol, and make further progress southeast of Baranovichi.

The Bulgarians capture Kumanovo and Veles, on the Nish-Saloniki railroad; they are driven out of Rabrovo by the French.

The Allied fleet begins a bombardment of Dedeaghatch and the Bulgarian coast on the Ægean; the Russian fleet bombards Varna.

The British Government issues a report by Brand Whitlock, American Minister at Brussels, on the execution of Miss Edith Cavell by the German military authorities; the German Emperor notifies the King of Spain of intervention in the cases of Frenchwomen and Belgians condemned to death.

22.—The Austro-Germans cross the Drina at Vishegrad; the Bulgarians capture Negotin and Roglyevo and occupy Uskub.

Greece declines to accept the offer of Cyprus and abandon her neutral policy.

The Germans storm Illutsk, near Dvinsk; a Russian force lands at Domeness, at the mouth of the Gulf of Riga, and destroys a German detachment.

23.—The Austro-Germans cross the Danube near Orsova, near the Rumanian frontier.

The French War Office reports the junction of French troops with the Serbian forces north of the Greek frontier.

The German cruiser *Prinz Adalbert* is sunk by a British submarine in the Baltic off Libau.

24.—The French capture a heavily fortified German position north of Meslin-lez-Hurlus, in the Champagne.

The Germans capture the island of Dahlen, in the Dvina.

The Italians storm the heights of Dossecassina, between Lake Garda and the Adige.

Austrian aeroplanes bombard Venice and destroy an historic church.

25.—The French and Serbians recapture Veles.

26.—The Austro-Germans effect a junction with the Bulgarians at Ljubicevac, on the Danube; the Germans occupy Brza Palanka.

The British transport *Marquette* is reported sunk by a submarine in the Ægean with a loss of 99 lives.

Sir Edward Grey informs the British House of Commons that Great Britain's offer of Cyprus to Greece has lapsed.

27.—The Bulgarians capture Zaiccar, Kniasyevac and the heights northeast of Pirot, and cross the Timok River along a wide front; the Austrians cross the Drina east of Vishegrad.

A Russian squadron bombards Varna.

Ambassador Gerard is instructed to intercede informally with the German Government for clemency for 32 persons condemned to death for alleged espionage at Liège.

28.—The Bulgarians occupy Pirot.

29.—The Austro-Germans capture Milanovac, Serbia; the Bulgarians capture the Tozibata ridge and the town of Grdeljica, and reoccupy Veles; the French capture Strumitza Station.

30.—The Germans attack heavily in Artois and Champagne and recover the

Butte de Tahure and some trenches northeast of Neuville-St. Vaast.

The Bulgarians capture Bala Palanka.

31.—The Germans capture Kraguyevac, the main Serbian arsenal.

The French submarine *Turquoise* is reported sunk by Turkish artillery fire off the Dardanelles.

NOVEMBER

1.—The Russians cross Lake Ichkouv, southwest of Tarnopol, and make gains at other points.

The British torpedo boat No. 96 is sunk in a collision off Gibraltar.

2.—The Russians carry two heights in the region of Dvinsk and capture 5,000 prisoners at Sienikowce, on the Stripa.

Premier Asquith delivers in the British House of Commons an important speech on British military operation and policy.

3.—The Germans in Serbia occupy Paracin; the Bulgarians bombard the outer forts of Nish; the French repulse the Bulgarians at Krivolak and east of Rabrovo; the Montenegrins recapture Troglav.

4.—Navigation on the Danube is reopened.

The German submarine *U-8* strands on the Dutch coast and is interned.

The British War Office reports the capture by British forces of Bamenda and Banyo, in Kamerun.

5.—The Bulgarians capture Nish, the Serbian war capital; the Germans capture Kraljevo and Varvarin and establish connection with the main Bulgarian army.

The Austrians repulse the Russians from Sienikowce and the west bank of the Stripa.

The British submarine *E-20* is sunk in the Dardanelles and her crew made prisoners by the Turks.

The new British War Council holds its first meeting; Lord Kitchener leaves England on a mission to the Near East.

7.—The Germans capture Krusevac, Serbia, and cross the western Morava at several points; the French form a junction with the Serbians at Phares.

The Italians capture the Col di Lana, in the upper Cordevole.

The German cruiser *Undine* is sunk by a submarine in the Baltic.

The Italian steamer *Ancona*, out of Naples for New York with 412 passengers, is sunk in the Mediterranean by a submarine flying the Austrian flag; over 200 lives are lost, including several Americans.

9.—Premier Skouloudis of Greece conveys to the French Government assurances of benevolent neutrality toward the Entente powers.

10.—Persian *gendarmerie*, under foreign officers, revolt and imprison British subjects.

11.—The German War Office announces the evacuation of wooded country west and southwest of Shlok, on the Gulf of Riga.

12.—The Shah of Persia declares himself friendly to the Allies.

13.—The Germans penetrate the Russian lines near Podgacie, on the Styr; they are repulsed at Ixkull, before Riga.

14.—The Russians make further gains before Riga; near Czartorysk they retreat across the Styr.

The Austrians capture Sokolovio and Prokoplje, Serbia; the Bulgarians capture Krushevo.

Austrian aeroplanes bombard Verona, killing 30 persons.

The Austria-Hungarian Government announces the sinking of the *Ancona* by an Austrian submarine and charges that the ship tried to escape after warning.

15.—Austrian aeroplanes bombard Brescia, killing seven persons.

Earl Kitchener arrives at Lemnos; Denys Cochin, of the French Cabinet, arrives at Athens.

16.—The Bulgarians capture the Babuna Pass, occupy Prilep, and menace Monastir.

17.—The first meeting of the joint Anglo-French war council is held in Paris.

The British hospital ship *Anglia*, with 300 wounded aboard, is sunk by a mine in the English Channel, with a loss of nearly 100 lives.

18.—The Germans occupy Raska, Serbia, taking 5,000 prisoners.

Lord Lansdowne in the House of Lords explains the purpose of Earl Kitchener's visit to the Near East as the investigation of the situation on the Gallipoli Peninsula, from which Sir Charles Monro had advised withdrawal; M. Cochin is received by King Constantine of Greece.

Austrian aeroplanes bombard Venice.

19.—The Serbians are driven from their last positions in Old Serbia.

The Russians reoccupy Czartorysk and repulse the Austrians across the Styr.

Austrian aeroplanes bombard Udine, Verona and Vicenza.

A German battleship of the newest class is sunk by a mine in the Baltic.

The Allies take measures to suspend the economic and commercial facilities enjoyed by Greece.

20.—German troops occupy Novibazar; the Austrians cross the Drina near Cajnike.

Earl Kitchener arrives at Athens and confers with King Constantine of Greece.

Germany notifies the Greek Government that Greece must undertake to disarm Serbian and Allied troops driven into Greek territory.

A German cruiser is sunk by Russian warships in the Baltic off Windau.

21.—The first contingent of German troops is reported at Constantinople.

22.—The British forces in Asia Minor capture Ctesiphon, 18 miles from Bagdad, with 1,300 Turkish prisoners.

The French capture Brusnik, near Krivolak, Serbia.

23.—The Austrians capture Mitrovitza and the Germans Pristina; the Serbians are driven across the Sitnica River, west of Pristina, towards the Albanian frontier.

The Italians storm important Austrian positions at San Martino on the Carso Plateau.

The British Foreign Office issues a

statement denying that a blockade of Greek ports had been instituted or Greek vessels detained in British ports and announcing that certain trading privileges of the Greeks only had been suspended.

24.—The Russians drive the Austrians across the Stripa near Sienikowce.

The British forces before Bagdad retire a few miles in order to obtain water and again reoccupy Ctesiphon without opposition.

The ministers of the Entente powers present a collective note to the Greek Government demanding entire freedom of movement for their forces in Macedonia.

The Serbian Government is transferred to Scutari, Albania.

25.—Greece returns a friendly and satisfactory reply to the demands of the Entente Allies.

26.—The Serbians recapture Brod and Krushevo, north of Monastir.

The ministers of the Entente Allies present to the Greek Government a second collective note definitely outlining measures to be taken by Greece in conformity with the preliminary agreement.

The German cruiser *Frauenlob* is reported sunk by an Allied submarine in the Baltic.

27.—The Germans occupy Rudnik, southwest of Mitrovitza.

28.—The Bulgarians capture Prizrend; the German War Office announces the close of German operations against Serbia with the flight of the Serbian army into the Albanian mountains and the establishment of communications with Bulgaria and Turkey.

A German submarine is sunk by a British aeroplane off Middlekerke, Belgium.

29.—The Bulgarian War Office announces the probable end of the Serbian campaign with the occupation of Prisrend.

The British War Office reports the withdrawal of the forces before Bagdad to a point lower down the Tigris.

The German Emperor visits the Emperor of Austria at Vienna.

30.—The Austrians begin an invasion of Montenegro in heavy force.

The French Chamber of Deputies approves a bill providing for calling to the colors immediately the conscripts of the class of 1917.

The British Admiralty reports the sinking of the troopship *Woodfield*.

Earl Kitchener returns to London.

DECEMBER

1.—Baron Sonnino, Italian Foreign Minister, announces that Italy has given her adhesion to the agreement among the Allies not to conclude a separate peace, and will do everything possible to restore Serbia and preserve the independence of Albania.

Greece's reply to the demands of the Allies objects to certain military requirements and insists on the maintenance of her neutrality.

2.—The British force in Mesopotamia is reported in full retreat from Bagdad on Kut-el-Amara, having lost about 5,000 men in recent actions with the strongly reinforced Turks.

The Serbians evacuate Monastir, which is occupied by a mixed force of Bulgarians, Austrians and Germans.

General Joffre is appointed Commander-in-Chief of all the armies of France except those in North Africa.

3.—The Turkish destroyer *Yar Hissar* is sunk in the Sea of Marmora by a British submarine.

5.—The retreating British force in Mesopotamia halts in entrenched positions at Kut-el-Amara.

An Austrian squadron sinks the French submarine *Fresnel*, and five steamers and several sailing vessels discharging war material off San Giovanni de Medua, on the Albanian coast; an Austrian submarine sinks a small Italian cruiser off Avlona.

6.—Rumania closes the Danube to foreign navigation.

The first meeting of the joint war council of all the Allies, including Russia, Italy and Serbia, is held at Paris.

7.—The Allied forces in Serbia retire before the Bulgarians.

The Austrians occupy Ipek, Montenegro.

9.—The German Chancellor replies to a Socialist interpellation in the Reichstag in a speech declaring that Germany is ready to consider peace suggestions from her defeated adversaries and placing upon them the responsibility of hopelessly continuing the war.

10.—The Bulgarians in Monastir tear down the American flag from the American Red Cross hospital and seize the stores of flour, over the resistance of the two American Red Cross agents.

Austrian aeroplanes bombard Ancona, Italy.

11.—An Anglo-French war council at Paris decides to continue the Balkan expedition and maintain a base at Saloniki.

The announced period of enrollment under the Earl of Derby's recruiting plan in Great Britian expires; the period is extended to accommodate the final rush of applicants.

The munitions factory of the Belgian Government at Havre is destroyed by explosion.

12.—The Bulgars with some Teutonic reinforcements occupy Gievgeli and Doiran, the Allied bases near the Serbo-Greek frontier.

13.—The Allied force abandons its last positions in Serbia and retires across the Greek frontier.

14.—The Germans cross the Drina near Struga in pursuit of the remnants of the Serbian army.

The Greek Army begins the evacuation of the territory between Lake Doiran and Saloniki, leaving it free for the operations of the Allies.

The appointment of Gen. Sir Horace Smith-Dorrien to command the British forces operating in German East Africa is announced at London.

15.—The appointment of Gen. Sir Douglas Haig to succeed Field Marshal Sir John French as commander-in-chief of the British forces in France is announced at London.

The Montenegrin army in Herzegovina repulse the Austrians across the River Subeska.

The Italian destroyer *Intrepedo* and the transport *Re Umberto* are reported sunk in the Adriatic by drifting mines.

16.—Bulgaria announces the conclusion of an agreement for the establishment of a neutral zone two kilometres wide on each side of the Serbo-Greek frontier.

18.—Great Britain calls out four classes of single men enlisted under the Earl of Derby's recruiting plan.

The German Admiralty announce the sinking of the cruiser *Bremen* and a German torpedo boat by a submarine in the Baltic.

19.—The British repulse a German attack northeast of Ypres prepared by the use of poisonous gases.

20.—The British War Office announces the withdrawal of the Allied troops from the Suvla Bay and Anzac positions on the Gallipoli Peninsula; the British lost three men wounded.

The Russian Black Sea fleet bombards Varna, Bulgaria.

General Ruzsky is relieved from the command of the Russian northern armies.

21.—The French capture a part of the German works on Hartmannsweilerkopf, in the Vosges, taking 1,300 prisoners.

The Russians are reported to have occupied the town of Kum, Persia, after defeating the Turks with heavy loss.

The appointment of Lieut.-Gen. Sir Wm. R. Robertson, Chief of the British General Staff in France, as Chief of the Imperial Staff, succeeding Lieut.-Gen. Sir Archibald Murray, is announced at London.

The Japanese liner *Yasaka Maru* is sunk without warning by a submarine in the Mediterranean near Port Said; all the passengers and crew escape.

22.—The Germans recover the summit of Hartmannsweilerkopf.

24.—The French steamer *Ville de la Ciotat* is sunk without warning by a submarine in the Mediterranean with a loss of 80 lives.

25.—The Russians begin a strong offensive in Bessarabia and on the Dniester.

British troops disperse at Materuh the main body of Arabs attacking the western frontier of Egypt.

The British repulse the Turks in heavy attacks on the Kut-el-Amara positions.

27.—The British War Office announces the departure of the British Indian Army Corps from France.

28.—The French capture additional trenches on Hartmannsweilerkopf.

29.—Kashan, Persia, is reported occupied by the Russians.

An Austrian naval squadron attacking Durazzo is routed by Italian and other Allied vessels with the loss of the destroyers *Triglav* and *Lika*.

The French submarine *Monge* is sunk by an Austrian squadron in the Adriatic.

30.—The landing of British troops at the Greek port of Orphanos and of French troops on the Greek island of Castelorizo, off the Turkish port of Adalia, in Asia Minor, is reported at London.

The Allied military authorities at Saloniki arrest the German, Austrian, Turkish and Bulgarian consuls at Saloniki in retaliation for bombardment of warships and land positions by Teutonic aeroplanes.

The British armored cruiser *Natal* is sunk in a British harbor by an internal explosion, with a loss of many lives.

The British liner *Persia* is sunk without warning by a submarine in the Mediterranean off Crete, with a loss of about 300 lives, among them the American consul at Aden.

31.—The Russians cross the Styr near Czartorysk and repulse the Austro-Germans across the Dniester near Uscieczko.

AMERICAN NECROLOGY

ADAMS, Charles Francis, Washington, March 20, aged 79; publicist and historian.

ADAMSON, Alfred, Malden, Mass., Feb. 22, aged 78; rear-admiral, U. S. N., retired.

ALBEE, John, Pequaket, N. H., March 24, aged 81; author.

ALDRICH, Nelson Wilmarth, New York, April 16, aged 73; Senator from Rhode Island, 1881-1911.

ALEXANDER, Gross, Long Beach, Cal., Sept. 6, aged 63; Methodist clergyman, editor of the *Methodist Review*.

ALEXANDER, James Waddell, Tuxedo, N. Y., Sept. 21, aged 76; former president of the Equitable Life.

ALEXANDER, John White, New York, May 31, aged 58; painter.

ALLEN, Charles Julius, Asheville, N. C., June 15, aged 75; brigadier-general, U. S. A., retired.

ALLEN, William Frederick, S. Orange, N. J., Nov. 9, aged 69; editor, secretary of the American Railway Association.

ANDERSON, George Smith, New York, March 7, aged 65; brigadier-general, U. S. A., retired.

ANDREWS, Alexander Boyd, Raleigh, N. C., April 17, aged 73; railroad official.

ARMSTRONG, Paul, New York, Aug. 30, aged 46; playwright.

AVERY, Susan Look (Mrs. Benjamin F.), Wyoming, N. Y., Feb. 1, aged 97; writer and lecturer on social reform.

BACON, Edward Rathbone, Baltimore, Dec. 2, aged 69; vice-president of the Baltimore & Ohio Railroad.

BACON, Henry, Goshen, N. Y., March 25, aged 69; Representative from New York, 1886-7.

BAGLEY, George A., Watertown, N. Y., May 12, aged 87; Representative from New York, 1875-9.

BAIN, Charles Wesley, Chapel Hill, N. C., March 15, aged 51; professor of Greek in the University of North Carolina.

BANCROFT, William H., Salt Lake City,

April 22, aged 74; president of the Oregon Short Line Railway.

BARBER, Amos W., Rochester, Minn., May 18, aged 54; former Governor of Wyoming.

BARD, Thomas Robert, Hueneme, Cal., March 5, aged 73; Senator from California, 1900-5.

BEADLE, William Henry Harrison, San Francisco, Nov. 13, aged 77; Civil War general, educator.

BEEHLER, William Henry, Annapolis, Md., June 23, aged 67; commodore, U. S. N., retired.

BELL, James S., Minneapolis, April 6, aged 67; miller.

BENEDICT, Wayland Richardson, Arlington Heights, Mass., July 22, aged 67; professor emeritus of philosophy in the University of Cincinnati.

BENT, Luther Stedman, Philadelphia, April 19, aged 86; engineer.

BENTON, Stephen Olin, Mount Vernon, N. Y., Oct. 23, aged 66; Methodist Episcopal clergyman.

BERGER, Rudolph, New York, Feb. 27, aged 40; opera singer.

BESSEY, Charles Edwin, Lincoln, Neb., Feb. 25, aged 69; professor of botany in the University of Nebraska.

BIRKINBINE, John, Philadelphia, May 14, aged 71; mining engineer.

BITTER, Karl Francis Theodore, New York, April 10, aged 47; sculptor.

BLACK, John Charles, Chicago, Aug. 17, aged 76; president of the U. S. Civil Service Commission, 1904-13.

BLAIR, DeWitt Clinton, New York, June 3, aged 81; banker.

BLETHEN, Alden Joseph, Seattle, July 12, aged 68; editor of the *Seattle Times*.

BOARDMAN, George Nye, New York, Nov. 9, aged 89; Presbyterian theologian.

BOOKWALTER, John W., San Remo, Italy, Sept. 27, aged 76; manufacturer.

BOWLES, Samuel, Springfield, Mass., March 14, aged 63; editor of the Springfield *Republican*.

BOYNTON, Charles Augustus, Washington, Sept. 5, aged 78; journalist.

BRACKETT, Cyrus Fogg, Princeton, N. J., Jan. 29, aged 81; professor emeritus of physics in Princeton University.

BRACKETT, Gustavus Benson, Washington, Aug. 2, aged 88; pomologist.

BRADBURY, Joseph P., Pomeroy, Ohio, July 17, aged 77; chief justice of the Supreme Court of Ohio, 1893-1904.

BRENTANO, Simon, Orange, N. J., Feb. 15, aged 55; publisher.

BROWN, Thomas Jefferson, Greenville, Tex., May 26, aged 79; chief justice of the Texas Supreme Court.

BROWN, William W., New York, Jan. 31, aged 62; Representative-elect from Pennsylvania.

BRYAN, George James, New York, Jan. 23, aged 62; publisher and anthologist.

BUCKNAM, Ransford D., Constantinople, May 27, aged 45; naval adviser to the Sultan of Turkey.

BUNNY, John, Brooklyn, April 26, aged 52; actor.

BURKE, Thomas Martin Aloysius, Albany, Jan. 20, aged 75; Roman Catholic Bishop of Albany.

BURROWS, Julius Caesar, Kalamazoo, Mich., Nov. 16, aged 78; Senator from Michigan, 1895-1911.

BURT, Andrew Sheridan, Washington, Jan. 12, aged 75; brigadier-general, U. S. A., retired.

BUSSEY, Cyrus, Washington, March 2, aged 81; Civil War general, Assistant Secretary of the Interior, 1889-93.

CABLE, Benjamin Stickney, Byfield, Mass., Sept. 27, aged 53; Assistant Secretary of Commerce and Labor, 1909-13.

CALDWELL, Henry Clay, Los Angeles, Feb. 16, aged 82; U. S. circuit judge, Eighth Circuit, 1890-1903.

CALLENDER, Guy Stevens, Indian Neck, Conn., Aug. 8, aged 49; professor of economics in Yale University.

CARR, Lucien, Cambridge, Mass., Jan. 27, aged 85; archæologist.

CHAMPLIN, John Denison, New York, Jan. 8, aged 80; editor and author.

CHANDLER, John Gorham, Los Angeles, June 21, aged 84; brigadier-general, U. S. A., retired.

CHEEVER, David Williams, Boston, Dec. 27, aged 84; surgeon.

CLARK, Charles Heber ("Max Adeler"), Eaglesmere, Pa., Aug. 10, aged 74; novelist.

COCKRELL, Francis Marion, Washington, Dec. 13, aged 81; Senator from Missouri, 1875-1905.

CODMAN, Robert, Boston, Oct. 7, aged 69; Episcopal bishop of Maine.

COFFIN, Selden Jennings, Easton, Pa., March 15, aged 76; professor of astronomy in Lafayette College.

COLTON, Charles Henry, Buffalo, May 9, aged 66; Roman Catholic bishop of Buffalo.

COMAN, Katherine, Wellesley, Mass., Jan. 11, aged 57; professor emeritus of economics in Wellesley College.

COMSTOCK, Anthony, Summit, N. J., Sept. 21, aged 71; secretary of the New York Society for the Suppression of Vice.

CONANT, Alban Jasper, New York, Feb. 3, aged 93; portrait painter and author.

CONANT, Charles Arthur, Havana, July 6, aged 54; financial expert.

CONATY, Thomas James, Coronado, Cal., Sept. 18, aged 68; Roman Catholic bishop of Monterey and Los Angeles.

CONRAD, Holmes, Winchester, Va., Sept. 4, aged 76; former Solicitor-General of the U. S.

CONWAY, John A., Washington, Oct. 7, aged 62; professor of philosophy in Georgetown University.

COWHERD, William Strother, Pasadena, Cal., June 20, aged 54; Representative from Missouri, 1897-1905.

CREELMAN, James, Berlin, Feb. 12, aged 55; newspaper editor and correspondent.

CROFFUT, William Augustus, Washington, July 31, aged 70; editor and author.

CROSBY, Fanny (Mrs. Frances Jane Van Alstyne), Bridgeport, Conn., Feb. 12, aged 94; hymn writer.

CROWELL, Thomas Y., Montclair, N. J., July 29, aged 79; publisher.

CURTIS, George Milton, New York, May 14, aged 72; lawyer.

CUTHBERT, Lucius Montrose, Denver, Dec. 11, aged 59; lawyer and financier.

DAVIS, Theodore M., Miami, Fla., Feb. 23, aged 78; Egyptologist.

DAVISON, Alvin, Cincinnati, July 31, aged 48; professor of biology in Lafayette College.

DE BOER, Joseph Arend, Montpelier, Vt., Dec. 25, aged 54; president of the National Life Insurance Co.

DELAFIELD, Francis, Noroton, Conn., July 17, aged 73; pathologist.

DICKERMAN, Charles Heber, Milton, Pa., Dec. 17, aged 72; banker. Representative from Pennsylvania, 1903-5.

DOANE, William Howard, South Orange, N. J., Dec. 24, aged 83; Baptist clergyman, hymn writer and composer.

D'OOGE, Martin Luther, Ann Arbor, Mich., Sept. 12, aged 76; professor of Greek in the University of Michigan.

DOUGHERTY, William Edgeworth, Oakland, Cal., July 13, aged 73; brigadier-general, U. S. A., retired.

DU BOIS, Augustus Jay, New Haven, Conn., Oct. 19, aged 66; professor of civil engineering in Yale University.

DUGGAN, Walter Teeling, Washington, Jan. 2, aged 71; brigadier-general, U. S. A., retired.

DUNBAR, James Robert, Brookline, Mass., Aug. 20, aged 67; justice of the Superior Court of Massachusetts, 1888-98.

DUNHAM, Sylvester Clark, Hartford, Conn., Oct. 26, aged 69; life-insurance underwriter.

DUNN, Martha Baker, Waterville, Me., July 22, aged 67; author.

DYCHE, Louis Lindsay, Topeka, Kans., Jan. 20, aged 57; professor of zoölogy in the University of Kansas.

EASTON, Edward Denison, Central Valley, N. Y., April 30, aged 59; phonograph manufacturer.

EDMANDS, John, Philadelphia, Oct. 17, aged 95; librarian.

EDWARDS, William Seymour, Baltimore, Dec. 26, aged 59; lawyer and coal-mine operator.

ELKIN, John Pratt, Philadelphia, Oct. 3, aged 55; justice of the Supreme Court of Pennsylvania.

ELLIOT, Daniel Giraud, New York, Dec. 22, aged 80; zoölogist and explorer.

ELLIS, Rudolph, Bryn Mawr, Pa., Sept. 22, aged 77; banker.

ENGLIS, John, Brooklyn, April 1, aged 82; shipbuilder.

FAISON, John Miller, Faison, N. C., April 21, aged 53; Representative from North Carolina, 1911-13.

FARGO, James Congdel, New York, Feb. 8, aged 85; express company official.

FARMER, Fanny Merritt, Boston, Jan. 15, aged 57; cookery expert.

FERGUSSON, Harvey Butler, Albuquerque, N. M., June 10, aged 66; Representative from New Mexico, 1911-15.

FINLAY, Charles John, Havana, Aug. 20, aged 81; physician.

FISHER, Franklin, Sept. 9, aged 81; general, U. S. A., chief signal officer during Civil War.

FITCH, George, Berkeley, Cal., Aug. 9, aged 38; author.

FLINT, Austin, New York, Sept. 22, aged 79; physician.

FORMAN, Justus Miles, drowned at sea from *Lusitania*, May 7, aged 39; novelist and playwright.

FORSYTH, George Alexander, Rockport, Mass., Sept. 12, aged 77; brigadier-general, U. S. A., retired.

FORSYTH, James McQueen, Shamokin, Pa., Aug. 3, aged 73; rear-admiral, U. S. N., retired.

FORWOOD, William Henry, Washington, May 11, aged 76; brigadier-general, U. S. A., retired, surgeon-general, 1902.

FOSDICK, Charles Austin ("Harry Castlemon"), Hamburg, N. Y., Aug. 22, aged 72; author.

FOWLER, Thomas Powell, Warwick, N. Y., Oct. 12, aged 63; former president of the New York, Ontario & Western R. R.

FOX, Joseph John, Green Bay, Wis., March 14, aged 59; Roman Catholic bishop of Green Bay.

FREEMAN, Henry Blanchard, Douglas, Wyo., Oct. 16, aged 78; brigadier-general, U. S. A., retired.

FROHMAN, Charles, drowned at sea from *Lusitania*, May 7, aged 54; theatrical manager.

FULLER, Frank, New York, Feb. 19, aged 87; physician, governor of Utah during the Civil War.

FULLER, Paul, New York, Nov. 30, aged 67; lawyer.

GARRETT, Mary, Bryn Mawr, Pa., April 3, aged 60; philanthropist.

GERVILLE-REACHE, Jeanne (Mrs. George G. Rambaud), New York, Jan. 5, aged 34; opera singer.

GOODALE, Greenleaf Austin, Wakefield, Mass., Feb. 17, aged 75; brigadier-general, U. S. A., retired.

GOODELL, David Harvey, Antrim, N. H., Jan. 22, aged 80; Governor of New Hampshire, 1889-91.

GOODRICH, John Ellsworth, Burlington, Vt., Feb. 24, aged 84; professor emeritus of Latin in the University of Vermont.

GOULD, Elgin Ralston Lovell, Cartier, Ont., Aug. 18, aged 55; city chamberlain of New York, 1902-4, philanthropist.

GOULDEN, Joseph Augustus, Philadelphia, May 3, aged 70; Representative from New York.

GRAY, John Chipman, Boston, Feb. 25, aged 75; professor of law in Harvard University.

GRAY, John Clinton, Newport, R. I., June 28, aged 71; judge of the New York State Court of Appeals, 1888-1914.

GRANGER, Charles Trumbull, Long Beach, Cal., Oct. 26, aged 80; judge of the Supreme Court of Iowa, 1889-1900.

GREENE, Edward Lee, Washington, Nov. 10, aged 72; botanist.

GREENE, Henry Fay, Duluth, Dec. 20, aged 56; U. S. civil service commissioner, 1903-9.

GREGORY, Daniel Seelye, East Orange, N. J., April 14, aged 82; Presbyterian clergyman, educator, and editor.

GREGORY, Eliot, New York, June 1, aged 60; painter and author.

GROTON, William Mansfield, Philadelphia, May 25, aged 64; dean of the Philadelphia Divinity School.

GUILD, Curtis, Boston, April 6, aged 55; governor of Massachusetts 1906-9; Ambassador to Russia, 1911-13.

GUTHE, Karl Eugen, Ashland, Ore., Sept. 11, aged 49; professor of physics in the University of Michigan.

HADDOCK, Frank Channing, Hartford, Conn., Feb. 9, aged 61; author.

HAGNER, Alexander Burton, Washington, June 30, aged 88; justice of the Supreme Court of the District of Columbia, 1879-1903.

HALL, Allen Garland, Nashville, Tenn., Nov. 28, aged 53; dean of the Law School of Vanderbilt University.

HALL, James Knox Polk, Tampa, Fla., Jan. 5, aged 70; Representative from Pennsylvania, 1899-1903.

HAMILL, Howard M., Tate Springs, Tenn., Jan. 22, aged 65; president of the International Sunday School Association.

HAMMOND, Winfield Scott, Clinton, La., Dec. 30, aged 52; Governor of Minnesota.

HANCOCK, Albert Elmer, Kittatinny Park, Pa., Dec. 23, aged 45; author, former professor of English in Haverford College.

HARDY, Joseph Johnston, Easton, Pa., May 2, aged 70; professor of mathematics in Lafayette College.

HARPER, John Wesley, Biddeford Pool, Me., Aug. 14, aged 84; publisher.

HARRIS, Andrew Lintner, Eaton, O., Sept. 13, aged 79; Governor of Ohio, 1906-9.

HAWLEY, Charles B., Eatontown, N. J., Dec. 29, aged 57; organist and composer.

HENDERSON, Charles Richmond, Charleston, S. C., March 29, aged 65; professor of sociology in the University of Chicago.

HERRESHOFF, John Brown, Bristol, R. I., July 20, aged 74; yachtbuilder.

HEYWOOD, Charles, Washington, Feb. 26, aged 75; major-general, U. S. M. C., retired.

HODGES, John Sebastian Bach, Baltimore, May 1, aged 85; Protestant Episcopal clergyman, composer.

HOLDER, Charles Frederick, Pasadena, Cal., Oct. 11, aged 64; zoölogist and author.

HOLLENBECK, Conrad, Lincoln, Neb., Jan. 21; chief justice of the Supreme Court of Nebraska.

HOLMES, Joseph Austin, Denver, July 13, aged 55; director of the U. S. Bureau of Mines.

HORTON, Oliver Harvey, Chicago, Feb. 7, aged 79; lawyer.

HOUGH, Warwick, St. Louis, Oct. 28, aged 79; judge of the Supreme Court of Missouri, 1874-84.

HOWE, Walter, Washington, Nov. 8, aged 68; brigadier-general, U. S. A., retired.

HUBBARD, Elbert, drowned at sea from *Lusitania*, May 7, aged 55; author and lecturer.

HUBBARD, Thomas Hamlin, New York, May 19, aged 76; Civil War general, financier.

HUDSON, Richard, New York, Feb. 22, aged 69; former professor of English history in the University of Michigan.

HUMPHREY, Lyman Underwood, Independence, Kans., Sept. 12, aged 71; Governor of Kansas, 1889-93.

HUNTER, Thomas, New York, Oct. 14, aged 83; president emeritus of the New York Normal College.

INGERSOLL, Henry Hulbert, Knoxville, Tenn., March 12, aged 71; professor of law in the University of Tennessee.

ISHERWOOD, Benjamin Franklin, New York, June 19, aged 93; rear-admiral, U. S. N., retired.

IVINS, William Mills, New York, July 23, aged 64; lawyer.

JACKSON, William Humphreys, Salisbury, Md., April 3, aged 75; Representative from Maryland, 1901-5, 1907-9.

JAY, William, White Sulphur Springs, W. Va., March 28, aged 74; lawyer.

JOSEFFY, Rafael, New York, June 25, aged 61; pianist.

JOYCE, John Alexander, Washington, Jan. 18, aged 72; author.

KAVANAUGH, Williams Marmaduke, Little Rock, Ark., Feb. 21, aged 48; Senator from Arkansas, 1913.

KLEIN, Charles, drowned at sea from *Lusitania*, May 7, aged 48; playwright.

LEARNED, Walter, New London, Conn., Dec. 12, aged 68; banker and author.

LE MOYNE, Sarah Cowell, Lake Placid, N. Y., July 17, aged 55; actress.

LEONARD, H. Ward, New York, Feb. 18, aged 54; electrical engineer and inventor.

LIBBY, Charles Freeman, Portland, Me., June 3, aged 71; lawyer.

LILLEY, Mial E., Towanda, Pa., Feb. 27, aged 65; Representative from Pennsylvania, 1905-7.

LITTLE, George Thomas, Brunswick, Me., Aug. 6, aged 58; librarian of Bowdoin College.

LITTLEFIELD, Charles Edgar, New York, May 2, aged 63; Representative from Maine, 1899-1908.

LONG, John Davis, Hingham, Mass., Aug. 28, aged 76; Secretary of the Navy, 1897-1902.

LOUNSBURY, Thomas Raynesford, New Haven, Conn., April 9, aged 77; professor emeritus of English in Yale University.

LUDLOW, Nicoll, New York, Dec. 9, aged 73; rear-admiral, U. S. N., retired.

LUNDIN, Carl Axel Robert, Cambridge, Mass., Nov. 28, aged 64; optician.

LYMAN, Arthur Theodore, Boston, Oct. 24, aged 82; cotton manufacturer.

MCALVAY, Aaron Vance, Lansing, Mich., July 9, aged 67; justice of the Supreme Court of Michigan.

MCCLAIN, Emlin, Iowa City, May 25, aged 63; professor of law in Leland Stanford University, chief justice of the Iowa Supreme Court, 1906-12.

MCCLURE, John, Little Rock, Ark., July 8, aged 81; former chief justice of the Supreme Court of Arkansas.

MCCORMICK, Alexander Hugh, Annapolis, Md., Aug. 21, aged 73; rear-admiral, U. S. N., retired.

MCCREARY, George Deardorff, Philadelphia, July 26, aged 68; Representative from Pennsylvania, 1903-13.

MCCULLOUGH, John Griffith, New York, May 29, aged 79; Governor of Vermont, 1902-4.

MCGOWAN, John, Haines Falls, N. Y., Aug. 13, aged 72; rear-admiral, U. S. N., retired.

MCKELWAY, St. Clair, Brooklyn, July 16, aged 70; editor of the *Brooklyn Eagle*.

MACKENZIE, Alexander Cameron, Elmira, N. Y., March 23, aged 64; president of Elmira College.

MACKENZIE, Morris Robinson Slidell, Morristown, N. J., Jan. 16, aged 66; rear-admiral, U. S. N., retired.

MCPHERSON, Smith, Red Oak, Iowa, Jan. 17, aged 66; U. S. district judge for the Southern District of Iowa.

MACVANNEL, John Angus, St. Mary's, Ont., Nov. 10, aged 44; professor of the philosophy of education in Columbia University.

MAES, Camillus Paul, Covington, Ky., May 10, aged 69; Roman Catholic bishop of Covington.

MANATT, James Irving, Providence, R. I., Feb. 14, aged 69; professor of Greek in Brown University.

MANN, Henry, New York, Oct. 16, aged 67; magazine editor and author.

MANNEY, Henry Newman, San Diego, Cal., Oct. 25, aged 71; rear-admiral, U. S. N., retired.

MARTIN, James Loren, Montpelier, Vt., Jan. 14, aged 68; U. S. district judge for the District of Vermont.

MASON, Madison Charles Butler, Cincinnati, July 30, aged 56; Methodist Episcopal clergyman, negro educator.

MATSON, Courtland Cushing, Chicago, Sept. 4, aged 74; Representative from Indiana, 1881-9.

MERRICK, George Clarence, Upper Marlboro, Md., Nov. 22, aged 76; former judge of the U. S. circuit court.

MERRILL, Nathan Frederick, Burlington, Vt., Oct. 27, aged 66; professor emeritus of chemistry in the University of Vermont.

MILLS, Charles Francis, Springfield, Ill., Dec. 9, aged 72; editor and agriculturist.

MILLS, William Joseph, Las Vegas, N. M., Dec. 25, aged 66; Governor of New Mexico, 1910-1911.

MITCHELL, James Tyndale, Philadelphia, July 4, aged 80; justice of the Supreme Court of Pennsylvania, 1888-1909, chief justice, 1903-9.

MIZNER, Henry Rutgeras, Detroit, Jan. 4, aged 87; brigadier-general, U. S. A., retired.

MOLINEUX, Edward Leslie, Brooklyn, June 10, aged 81; Civil War general, manufacturer.

MOORE, David Hastings, Cincinnati, Nov. 23, aged 77; Methodist Episcopal bishop, educator.

MOORE, Edward Bruce, Washington, Sept. 6, aged 63; Commissioner of Patents, 1907-13.

MOTT, Jordan Lawrence, New York, July 26, aged 85; manufacturer.

MUCKLÉ, Mark Richards, Philadelphia, March 30, aged 89; journalist.

MUNGER, William Henry, Omaha, Aug. 11, aged 69; U. S. district judge, District of Nebraska.

NEFF, John Ulric, Carmel, Cal., Aug. 14, aged 53; professor of chemistry in the University of Chicago.

NELSON, William Rockhill, Kansas City, April 13, aged 74; editor of the *Kansas City Star*.

O'DONNELL, James, Jackson, Mich., March 17, aged 73; Representative from Michigan, 1884-92.

O'DONOVAN, Jeremiah ("O'Donovan Rossa"), New York, June 29, aged 83; Irish revolutionary leader.

ORMOND, Alexander Thomas, Grove City, Pa., Dec. 18, aged 68; president of Grove City College.

O'ROURKE, Jeremiah, Newark, N. J., April 22, aged 82; architect, former supervising architect of the Treasury Department.

PARKER, James Henry, New York, Jan. 27, aged 72; banker.

PARKER, Joseph Benson, Philadelphia, Oct. 21, aged 74; rear-admiral, U. S. N., retired.

PARRY, David MacLean, Indianapolis, May 12, aged 63; manufacturer.

PARSONS, John Edward, New York, Jan. 16, aged 85; lawyer.

PATTISON, James William, Asheville, N. C., May 29, aged 70; painter and author.

PEARSON, Fred Stark, drowned at sea from *Lusitania*, May 7, aged 53; engineer.

PHELPS, Edward Bunnell, New York, July 24, aged 51; editor and writer on insurance.

PHELPS, Thomas Stowell, Oakland, Cal., Nov. 3, aged 66; rear-admiral, U. S. N., retired.

PHILLIPS, Andrew Wheeler, New Haven, Conn., Jan. 20, aged 70; dean emeritus of the Graduate School of Yale University.

PHYFE, William Henry Pinkney, New York, March 7, aged 59; author.

PICKARD, Samuel Thomas, Amesbury, Mass., Feb. 12, aged 86; editor and author.

PITOU, Augustus, Hobe Sound, Fla., Dec. 4, aged 72; theatrical manager and playwright.

POOR, Henry William, New York, April 13, aged 70; banker, publisher of *Poor's Railway Manual*.

POWELL, Edward Payson, Sorento, Fla., May 14, aged 82; journalist and author.

PREETORIUS, Edward L., Nov. 1, aged 49; publisher of the St. Louis *Times* and *Westliche Post*.

PUTNAM, Frederick Ward, Cambridge, Mass., Aug. 14, aged 76; anthropologist.

PUTNAM, John Bishop, Rye, N. Y., Oct. 7, aged 66; publisher.

QUIGLEY, James Edward, Rochester, N. Y., July 10, aged 60; Roman Catholic Archbishop of Chicago.

RAND, Stephen, Washington, July 12, aged 71; rear-admiral, U. S. N., retired.

RAWLE, William Brooke, Philadelphia, Dec. 1, aged 72; lawyer and military historian.

REAM, Norman Bruce, New York, Feb. 9, aged 70; capitalist.

REESE, Thomas, Richmond, Va., March 25, aged 64; professor of the English Bible in Union Theological Seminary.

RICE, Isaac Leopold, New York, Nov. 2, aged 65; lawyer and financier.

RIDDER, Herman, New York, Nov. 1, aged 64; publisher and editor of the *New Yorker Staats-Zeitung*.

RIPLEY, Edward Hastings, Rutland, Vt., Sept. 14, aged 76; Civil War general, financier.

ROBERTSON, Morgan, Atlantic City, March 24, aged 53; novelist.

ROBINSON, Edward Van Dyke, New York, Dec. 10, aged 47; professor of economics in Columbia University.

ROLLINS, Frank West, Boston, Oct. 27,

aged 55; banker, Governor of New Hampshire, 1899-1901.

ROTHSCHILD, Alonzo, East Foxboro, Mass., Sept. 27, aged 52; author.

RUSSEL, George Howard, Detroit, May 17, aged 67; banker.

SAVAGE, George Slocum Folger, Chicago, Aug. 6, aged 98; Congregational clergyman.

SAWYER, Rollin Augustus, Montclair, N. J., Jan. 18, aged 84; Presbyterian clergyman, editor.

SAWYER, Walter Leon ("Winn Standish"), Boston, Jan. 29, aged 52; editor and novelist.

SCANLAN, Lawrence, Salt Lake City, May 10, aged 71; Roman Catholic bishop of Salt Lake.

SCHAUFFLER, Alfred Theodore, June 11, aged 74; treasurer of Robert College, Constantinople, former superintendent of schools in New York City.

SCHECHTER, Solomon, New York, Nov. 19, aged 67; Jewish theologian, author.

SCHINDLER, Solomon, Boston, May 5, aged 73; Jewish rabbi, author.

SCHWENK, Samuel K., New York, April 10, aged 73; Civil War general.

SEAMAN, William Henry, Coronado Beach, Cal., March 8, aged 72; U. S. circuit judge, 7th circuit.

SEAMANS, Clarence Walker, Rockport, Mass., May 30, aged 60; manufacturer.

SEAY, Abraham Jefferson, Long Beach, Cal., Dec. 22, aged 83; Governor of Oklahoma Territory, 1892-3.

SEDGWICK, Arthur George, Pittsfield, Mass., July 14, aged 70; lawyer, author and journalist.

SEIDERS, George Melville, Portland, Me., May 26, aged 71; lawyer, attorney-general of Maine, 1900-5.

SEWARD, Frederick William, Auburn, N. Y., April 25, aged 84; Assistant Secretary of State, 1861-9, 1877-81, author.

SHALER, Charles, Indianapolis, March 26, aged 71; brigadier-general, U. S. A., retired.

SHARP, Benjamin, Morehead, N. C., Jan. 24, aged 56; zoölogist.

SHERMAN, Frank Asbury, Hanover, N. H., Feb. 26, aged 73; professor of mathematics in Dartmouth College.

SHORTRIDGE, N. Parker, Wynnewood, Pa., Jan. 3, aged 85; capitalist.

SHURTLEFF, Roswell Morse, New York, Jan. 6, aged 76; painter.

SINCLAIR, John Elbridge, Worcester, Mass., Sept. 12, aged 77; professor emeritus of mathematics in Worcester Polytechnic Institute.

SLOANE, William Douglas, Aiken, S. C., March 19, aged 71; merchant and philanthropist.

SMITH, Francis Hopkinson, New York, April 7, aged 76; author, artist and engineer.

SMITH, Gerrit, Amityville, N. Y., May 4, aged 76; telegraph engineer, inventor.

SMITH, Rodney, Brandon, Vt., Nov. 12, aged 86; brigadier-general, U. S. A., retired.

SNYDER, Zachariah Xenophon, Greeley, Col., Nov. 11, aged 65; president of the Colorado State Normal School.

SOMERVILLE, Henderson Middleton, Edgemere, L. I., Sept. 15, aged 78; president of the Board of U. S. General Appraisers.

SPRAGUE, William, Paris, Sept. 11, aged 83; Governor of Rhode Island, 1861-3, Senator, 1863-75.

STAHR, John Summers, Lancaster, Pa., Dec. 21, aged 74; Reformed Church clergyman, president emeritus of Franklin and Marshall College.

STERNBERG, George Miller, Washington, Nov. 3, aged 77; brigadier-general, U. S. A., retired, Surgeon-General, 1893-1902.

STEVENSON, Matilda Coxe (Mrs. James), Oxon Hill, Md., June 24, aged 60; ethnologist.

STEWART, John Wolcott, Middlebury, Vt., Oct. 29, aged 89; Representative from Vermont, 1883-91, Senator, 1908, Governor of Vermont, 1870-2.

STILLMAN, Thomas Bliss, Jersey City, Aug. 10, aged 63; chemical engineer.

STONE, Herbert Stuart, drowned at sea from *Lusitania*, May 7, aged 43; publisher.

STORY, John Patten, Pasadena, Cal., March 25, aged 73; major-general, U. S. A., retired.

STREETT, David, Baltimore, July 30, aged 59; physician, dean of the Baltimore Medical College.

SULZBACHER, Louis, New York, Jan. 17, aged 72; U. S. district judge, Western District of Indian Territory, 1904-7.

SUTHERLAND, Roderick Dhu, Kansas City, Kans., Oct. 18, aged 53; Representative from Nebraska, 1897-1901.

TASSIN, Wirt du Vivier, Washington, Nov. 2, aged 46; chemist and metallurgist.

TAYLOR, Frederick Winslow, Philadelphia, March 21, aged 59; engineer, efficiency expert.

TAYLOR, John Phelps, Andover, Mass., Sept. 13, aged 74; Congregational clergyman and educator.

THOMAS, Jesse Burgess, Brooklyn, June 6, aged 82; Baptist clergyman, professor emeritus of church history in Newton Theological Seminary.

TISDALL, Fitz Gerald, New York, Nov. 11, aged 75; professor of Greek in the College of the City of New York.

TOLL, William Edward, Chicago, June 27, aged 71; Protestant Episcopal bishop (suffragan) of Chicago.

TOMPKINS, Charles Henry, Washington, Jan. 18, aged 84; brigadier-general, U. S. A., retired.

TRACY, Benjamin Franklin, New York, Aug. 6, aged 85; Civil War general, jurist, Secretary of the Navy, 1889-93.

TRUDEAU, Edward Livingston, Saranac Lake, N. Y., Nov. 15, aged 67; physician.

VAN AMRINGE, John Howard, Morristown, N. J., Sept. 10, aged 80; dean of Columbia College, 1896-1910.

VAN DEMAN, Henry Elias, Washington, April 28, aged 69; pomologist.

VANDERBILT, Alfred Gwynne, drowned at sea from *Lusitania*, May 7, aged 37; capitalist.

VICKERS, Alonzo Knox, East St. Louis, Ill., Jan. 21, aged 61; justice of the Supreme Court of Illinois.

WALDO, Henry L., Kansas City, Mo., July 10, aged 71; former U. S. district judge of the District of New Mexico.

WALKER, Albert Henry, New York, Aug. 31, aged 70; lawyer and author.

WALSH, Blanche, Cleveland, Oct. 31, aged 42; actress.

WALWORTH, Ellen Hardin (Mrs. M. T.), Washington, June 23, aged 82; writer and lecturer.

WARE, William Robert, Milton, Mass., June 9, aged 83; architect, professor emeritus of architecture in Columbia University.

WARNER, Anna Bartlett ("Amy Lothrop"), Highland Falls, N. Y., Jan. 22, aged 84; author.

WARREN, Samuel Prowse, New York, Oct. 7, aged 74; organist and composer.

WASHBURN, George, Boston, Feb. 15, aged 81; president of Robert College, Constantinople, 1870-1903.

WASHINGTON, Booker Taliaferro, Tuskegee, Ala., Nov. 14, aged 56; negro educator.

WASHINGTON, Joseph E., Wessyengton, Tenn., Aug. 28; Representative from Tennessee, 1887-97.

WATSON, William, Boston, Sept. 30, aged 81; secretary of the American Academy of Arts and Sciences.

WEIDNER, Revere Franklin, Tangier, Fla., Jan. 6, aged 63; Lutheran theologian, president of the Chicago Lutheran Theological Seminary.

WEISSE, Faneuil Dunkin, Gedney Farms, N. Y., June 22, aged 72; surgeon.

WIDENER, Peter A. Brown, Elkins Park, Pa., Nov. 6, aged 80; capitalist.

WILLIAMS, John Langbourne, Richmond, Va., Feb. 11, aged 83; banker.

WING, Charles Hallet, Boston, Sept. 14, aged 79; chemist.

WITHERSPOON, Samuel Andrew, Meridian, Miss., Nov. 24, aged 60; Representative from Mississippi since 1911.

WITTHAUS, Rudolph August, New York, Dec. 20, aged 69; toxiologist.

WOOD, Palmer Gaylor, Beverley Hills, Cal., July 18, aged 72; brigadier-general, U. S. A., retired.

WOODBURY, Urban Andrian, Burlington, Vt., April 15, aged 76; Governor of Vermont, 1894-6.

WOODRUFF, Charles Edward, New Rochelle, N. Y., June 13, aged 54; colonel, Medical Corps, U. S. Army.

WRIGHT, Arthur Williams, New Haven, Conn., Dec. 19, aged 79; professor emeritus of physics in Yale University.

WRIGHT, John Montgomery, Washington, Jan. 2; marshal, U. S. Supreme Court.

WYMAN, Albert U., Washington, March 4, aged 81; former Treasurer of the United States.

FOREIGN NECROLOGY

AGLIARDI, Anthony, Rome, March 20, aged 82; cardinal, Chancellor of the Roman Catholic Church.

ALVERSTONE, Richard Webster, Viscount, London, Dec. 15, aged 72; Lord Chief Justice of England, 1900-14.

AUBERT, Marie Jacques Charles, Paris, June 7, aged 67; French admiral, chief of the General Staff of the Navy.

BARNABY, (Sir) Nathaniel, London, June 15, aged 86; naval architect.

BASTIAN, Henry Charlton, Chesham Bois, England, Nov. 17, aged 78; neurologist, author.

BENSON, Richard Meux, Oxford, England, Jan. 14; founder of the Society of St. John the Evangelist.

BILLINGHURST, Guillermo, Iquique, Chile, June 28, aged 64; President of Peru, 1912-14.

"BOLDREWOOD, Rolf" (Thomas Alexander Browne), Melbourne, March 11, aged 88; novelist.

BOVERT, Theodor, Berlin, Oct. 16, aged 53; German zoölogist.

BRADDON, Mary Elizabeth (Mrs. John Maxwell), Richmond, England, Feb. 4, aged 77; novelist.

BULLEN, Frank Thomas, Madeira, March 1, aged 57; English novelist and lecturer.

BUXTON, (Sir) Thomas Fowell, London, Oct. 28, aged 78; Governor of South Australia, 1895-98.

CADOGAN, George Henry, Earl of, London, March 6, aged 75; Lord Lieutenant of Ireland, 1895-1902.

CALVO, Joaquin Bernardo, Washington, Nov. 22, aged 58; Minister to the U. S. from Costa Rica, 1896-1914.

CARDEN, (Sir) Lionel Edward Gresley, London, Oct. 16, aged 64; British Minister to Mexico, 1913-14.

CHURCH, (Sir) Arthur Herbert, London, June 1, aged 81; chemist and ceramist.

CLOUSTON, (Sir) Thomas Smith, Edinburgh, April 19, aged 74; psychiatrist.

CONSTANTINE Constantinovitch, Grand Duke, Petrograd, June 15, aged 57.

COSTA, Alfonso, Lisbon, July 13; Portuguese statesman.

CRANE, Walter, London, March 15, aged 69; painter and author.

DE BOUCHERVILLE, Charles Eugene Boucher, Montreal, Sept. 10, aged 93; Premier of Quebec, 1874 and 1891.

DE CAILLAVET, Gaston Armand, Paris, Jan. 13, aged 45; French dramatist.

DE GOUMONT, Rémy, Paris, Sept. 28, aged 57; French poet.

DIAZ, Porfirio, Paris, July 2, aged 84; President of Mexico, 1877-1911.

DONALDSON, (Sir) James, London, March 9, aged 84; principal of the University of St. Andrews.

EDWARDES, George, London, Oct. 4, aged 62; theatrical manager.

EHRLICH, Paul, Bad Homburg, Germany, Aug. 20, aged 61; pathologist.

EMMICH, Otto von, Hanover, Germany, Dec. 22; German general commanding at the siege of Liège.

FABRE, Jean Henri, Orange, France, Oct. 11, aged 91; entomologist.

FLEMING, (Sir) Sandford, Halifax, N. S., July 22, aged 88; engineer.

FLORES, Antonio, Geneva, Switzerland, Aug. 31; President of Ecuador, 1888-92.

GEIKIE, James, Edinburgh, March 2, aged 75; geologist.

GERMAIN, Auguste, Paris, Dec. 15, aged 53; French playwright.

GLANTAWE, John Jones Jenkins, Baron,

July 26, aged 80; Welsh financier and publicist.

GLASGOW, David Boyle, Earl of, Fairlie, Scotland, Dec. 13, aged 82; Governor of New Zealand, 1892-7.

GOLDMARK, Carl, Vienna, Jan. 3, aged 84; composer.

GOWERS, (Sir) William Richard, London, May 4, aged 70; physician, author.

GRACE, William Gilbert, London, Oct. 23, aged 67; surgeon, cricketer.

GUICCIARDINI, Count, Florence, Sept. 1; Italian statesman.

HARDIE, James Keir, Glasgow, Sept. 26, aged 59; British labor leader and member of Parliament.

HARTLEY, (Sir) Charles Augustus, London, Feb. 22, aged 89; civil engineer.

HERVIEU, Paul Ernest, Paris, Oct. 25, aged 58; French dramatist.

ILLINGWORTH, Percy Holden, London, Jan. 3, aged 45; chief Liberal whip in the British House of Commons.

INOUYE, Marquis Kaoru, Tokio, Sept. 1, aged 80; Japanese statesman.

JERSEY, Victor Albert George Villiers, Earl of, London, May 31, aged 70; Governor-General of New South Wales, 1890-93.

KENNEDY, (Sir) William Rann, London, Jan. 17, aged 68; English jurist.

LAIDLAW, (Sir) Robert, London, Nov. 5, aged 59; president of the World's Sunday School Association.

LAMB, (Sir) John Cameron, Hampstead, England, March 30, aged 70; telegraph engineer.

LAMPRECHT, Karl, Leipsic, May 11, aged 59; German historian, professor of history in the University of Leipsic.

LANGELIER, (Sir) François Xavier, Quebec, Feb. 8, aged 76; Lieutenant-Governor of Quebec.

LESCHETIZKY, Theodor, Dresden, Nov. 17, aged 85; piano teacher.

LINDEQUIST, Oskar von, April 19, aged 77; field marshal of the German Army, retired.

LÖFFLER, Friedrich August Johannes, Berlin, April 9, aged 62; bacteriologist.

LONDONDERRY, Charles Stewart Vane-Tempest-Stewart, Marquis of, London, Feb. 8, aged 62; British statesman, Viceroy of Ireland, 1886-9.

LORENZELLI, Benedetto, Florence, Sept. 16, aged 62; cardinal.

LYDEKKER, Richard, London, April 18, aged 65; naturalist.

"Maartens, Maarten" (Joost Marius Willem Van der Poorten-Schwartz), Zeist, Holland, Aug. 4, aged 56; novelist.

MARTIN, Pierre, Paris, May 23; steel maker and inventor.

MELDOLA, Raphael, London, Nov. 16, aged 66; chemist.

MEUMANN, Ernst, Hamburg, Germany, April; psychologist.

MEZIÈRES, Alfred Jean François, Oct. 11, aged 89; French critic and author.

MORIARTY, John Francis, London, May 2; Lord Justice of Appeal for Ireland.

MURRAY, (Sir) James Augustus Henry, Oxford, July 27, aged 78; editor of the *New English Dictionary*.

NARES, (Sir) George Strong, London, Jan. 15, aged 83; British admiral, explorer.

NOBLE, (Sir) Andrew, London, Oct. 22, aged 84; ordnance expert.

OROZCO, Pascual, Culberson Co., Texas, Aug. 31; Mexican general.

PELLETAN, Camille, Paris, June 4; former French Minister of Marine.

PERETZ, Isaac Loeb, Warsaw, April 3, aged 63; Hebrew author.

PHILLIPS, Stephen, Deal, England, Dec. 9, aged 47; poet.

REUTER, Baron Herbert de, Reigate, England, April 18, aged 63; managing director of the Reuter press service.

RHYS, (Sir) John, Oxford, England, Dec. 17, aged 75; professor of Celtic and master of Jesus College, Oxford University.

ROCOE, (Sir) Henry Enfield, London, Dec. 19, aged 82; chemist.

ROSTAND, Eugene, Paris, Jan. 20, aged 71; French economist.

ROTHSCHILD, Nathan Mayer, Baron, London, March 31, aged 74; banker and philanthropist.

RUCKER, (Sir) Arthur William, London, Nov. 1, aged 67; physicist, principal of the University of London, 1901-8.

SCRIABIN, Alexander Nicholaevich, Moscow, April 27, aged 43; Russian composer.

STAAFF, Karl Albert, Stockholm, Oct. 4; Swedish statesman.

STOESSEL, Anatole Mikailovitch, Petrograd, Jan. 16, aged 67; Russian general.

TANEJEFF, Sergius, Petrograd, June 20, aged 59; Russian composer.

TUPPER, (Sir) Charles, Broomwood, England, Oct. 30, aged 94; Canadian statesman.

TURNER, (Sir) George, Colyton, England, March 12, aged 70; physician.

VAN HORNE, (Sir) William Cornelius, Montreal, Sept. 11, aged 72; former president of the Canadian Pacific Railway.

VAN MILLINGEN, Alexander, London, Sept. 15, aged 74; historian.

VANNUTELLI, Serafino, Rome, Aug. 19, aged 81; cardinal, Dean of the Sacred College.

VASZARY, Claudius Francis, Gran, Hungary, Sept. 4, aged 83; cardinal, Archbishop of Gran.

WALDTEUFEL, Emile Charles, Paris, Feb. 16, aged 77; French composer.

WALLER, Lewis, London, Nov. 1, aged 54; actor.

WANGENHEIM, (Baron) Hans von, Constantinople, Oct. 25; German Ambassador to Turkey since 1912.

WELBY, Reginald Earle, Baron, Malwood, England, Oct. 29, aged 83; British financial expert and Treasury official.

WERNER, Anton von, Berlin, Jan. 5, aged 71; painter.

WILLARD, Edward Smith, London, Nov. 9, aged 62; actor.

WITTE, Count Sergei Julievitch, Petrograd, March 12, aged 65; Russian statesman.

YOUNG, (Sir) Allen William, London, Nov. 22, aged 85; Arctic explorer.

ZAMOR, Orestes, Port au Prince, Haiti, July 27; former President of Haiti.

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